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MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF MAY, 1903.

ISSUED BY

J. W. STOCKWELL,
SECRETARY STATE BOARD OF AGRICULTURE.



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CROP REPORT FOR THE MONTH OF MAY, 1903.

OFFICE OF STATE BOARD OF AGRICULTURE,
BOSTON, MASS., June 2, 1903.

Bulletin No. 1, Crop Report for the month of May, our first monthly crop bulletin for the present season, is herewith presented. No marked changes in the form and substance of these bulletins from those of late years is contemplated at the present time, but suggestions for improvement will be welcomed and given full consideration. Whenever practicable, an article by some recognized authority on the special line he is asked to treat upon will be included in each bulletin, and it will be our purpose to have these articles as timely to the season and conditions as possible. An article on "Fruits for the home garden: varieties and culture," by Prof. F. A. Waugh, professor of horticulture at the Massachusetts Agricultural College, will be found printed at the close of this bulletin.

PROGRESS OF THE SEASON.

The May returns to the Statistician of the United States Department of Agriculture (Crop Reporter for May, 1903) show the area under winter wheat in cultivation May 1 to have been about 33,107,000 acres. This is 964,000 acres, or 2.8 per cent, less than the area sown last fall, and 4,525,000 acres, or 15.8 per cent, in excess of the area of winter wheat harvested last year. The average condition for that under cultivation was 92.6, against 97.3 for the total area sown on April 1, 76.4 on May 1, 1902, 94.1 in 1901, and 82.5, the mean of the averages of the last ten years.

The average condition of winter rye was 93.3, as compared with 97.9 on April 1, 83.4 on May 1 of last year, 94.6 in 1901, and 88.4, the mean of the May averages of the last ten years.

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The average condition of meadow mowing lands was 92.8, against 86.6 on May 1 of last year, 92.8 in 1901, and 88.4, the mean of the May averages of the last ten years.

The average condition of spring pastures was 92, against 84.9 on May 1 of last year, 91.5 in 1901, and 89.9, the mean of the May averages of the last ten years.

The proportion of spring plowing actually done of that contemplated, 57.9, was the lowest, with one exception, in twenty years.

In Massachusetts the average condition of meadow mowing lands was given as 96, the average condition of spring pasture as 94 and the proportion of spring plowing actually done as 50.

WEATHER SUMMARY, JAN. 1 TO MAY 1, 1903.

[FURNISHED BY THE WEATHER BUREAU, BOSTON.]

The weather of January was of the usual mid-winter type. Several severe storms passed over the district, and frequent severe gales were experienced along the coast. The most severe storms of the month were those of the 10th-11th, 17th-18th, 20th-21st, 24th-25th. The weather was somewhat milder than usual for January, the mean temperature being about 1° above the normal. There were no unusual extremes of temperature, and a noticeable feature in connection with this element was the absence of the warm period, usually known as the "January thaw." The precipitation showed a slight deficiency, as compared with the normal of the month. The snowfall was also rather light, but, owing to the uniform conditions of temperature, the ground was generally well covered until the close of the month.

February was marked by rapid and pronounced changes in the weather. A heavy snow storm, a cold wave, a thaw, thunderstorms and gales of hurricane force were prominent features. The storm of the 16th-17th was unusually severe. It reached all sections with heavy snow, and gales of great violence occurred along the coast. The month was warmer than usual for February, the monthly temperature being about 2° above the normal. The precipitation was also in excess, but the distribution was somewhat irregular. At

the close of the month the ground was generally bare, snow being found only in the woods and protected places.

The weather during March was very pleasant, although unseasonal, and some of its elements were phenomenal and without precedent in a century of authentic meteorological records. The precipitation was largely in excess, the monthly amounts being from $1\frac{1}{2}$ to 2 inches above the normal. The snowfall was, however, unusually light, and at the close of the month there was none on the ground. The temperature conditions of March were by far the most interesting, and abnormal features of the month. The monthly mean temperature was the highest of official records, covering a period of thirty-two years, and averaged about 10° above the normal for March. According to authentic records, covering a period of one hundred years, the month was the warmest of its name within a century. As a result, vegetation and farming operations were reported from two to four weeks in advance of the average season.

The weather of April was uneventful, and generally characteristic of the season. The temperature was somewhat in excess, ranging about 1.5° above the monthly normal. The precipitation was near the normal, the departures generally being from one-quarter to one-half below the usual monthly amounts. Generally speaking, April was a pleasant month. At its close the season was estimated to be from a week to ten days in advance of the normal.

TEMPERATURE AND RAINFALL FOR THE WHOLE COUNTRY.

[FROM UNITED STATES CLIMATE AND CROP BULLETINS.]

Week ending May 4. — The week averaged slightly warmer than usual over portions of California and the north Pacific coast, over the east portion of the Lake region and in the Middle Atlantic States. Throughout the central valleys, southern States and Rocky Mountain districts the temperature averaged below normal. The minimum temperatures were unusually low in the middle and northern Rocky Mountain regions, and in all districts eastward to northern New England. More than the average amount of rain fell over an area extending from Kansas north-east-

ward to the upper Lake region. Generally throughout the central valleys, lower Lake region, Atlantic coast and east Gulf districts the rainfall was very light and much below the average. There was an entire absence of rain over much of the New England States.

Week ending May 11. — The week was very cool in the southern States and portions of the Ohio valley and Middle Atlantic States, and slightly cooler than usual over the eastern portions of southern New England. The temperature averaged above the normal in northern New England, over the northern portion of the Middle Atlantic States, in the Lake region, upper Mississippi and Missouri valleys, and generally throughout the Rocky Mountain and Pacific coast districts. In the central and east Gulf and South Atlantic States, and from the west Gulf coast northward to South Dakota and Minnesota, the rainfall was ample and generally above the average. The central Mississippi, and Ohio valleys, lower Lake region, Middle Atlantic States and southern New England were practically without rain.

Week ending May 18. — The week was warmer than the average from the Middle Atlantic and New England coasts westward to the Rocky Mountains, the average daily temperature ranging from 3° to 10° per day above the average from the Missouri valley eastward to New England. In the southern States and over the greater part of the Pacific coast region the week was cooler than the average. Practically no rain fell during the week ending May 18 in New England and the Middle Atlantic States and over a large part of the Ohio valley and Lake region, and there was less than the average over the greater part of the west Gulf States and in portions of the upper Missouri and upper Mississippi valleys. In the lower Missouri valley and generally throughout the east Gulf States the rainfall was abundant. The western portion of the upper Lake region also received more than the average.

Week ending May 25. — Except along the immediate Gulf coast and in the upper Mississippi valley the week averaged warmer than usual in all districts eastward of the Rocky Mountains, the excess being most marked from the

central Mississippi valley eastward to the Middle Atlantic coast. In the Rocky Mountain and Pacific coast districts the week was decidedly cool. In New England and over a large part of the Gulf and South Atlantic States little or no rain fell during the week. From Oklahoma and western Arkansas northward to the Dakotas very heavy rains fell, while good rains occurred in the central and upper Mississippi valleys and over a large part of the Lake region, Ohio valley, and Middle Atlantic States. Throughout the Pacific coast region there was less than the average rainfall.

SPECIAL TELEGRAPHIC REPORTS.

[WEATHER BUREAU, BOSTON.]

Week ending May 4. — New England. Boston : Week favorable for farm work and first part to crop growth ; frost did some damage ; grass and all crops need rain ; very dry ; comparatively little planting done ; all fruits, except peaches, bloom full, but crop in doubt.

Week ending May 11. — New England. Boston : Weather exceptionally fine for farm work, but rain much needed for grass and crops already planted, growth of which is very slow : fruit buds probably average, except peaches : small fruits promise well.

Week ending May 18. — New England. Boston : Germination and growth of all fruits retarded by drought : grass probably injured : seeding about completed : apples average bloom for off year : other fruit promising, except peaches : tobacco beds only fair, but little setting done ; urgent need of rain.

Week ending May 25. — New England. Boston : Droughty conditions intensified : all crops and grass at a standstill and suffering for rain : frost 24th damaged tender vegetation considerably : apples setting well, and other fruits promising, except peaches ; tobacco setting retarded by drought.

THE WEATHER OF MAY, 1903.

May was distinguished by a preponderance of sunny weather and a marked deficiency of precipitation. The

temperature conditions presented no unusual features, except some noticeable extremes during the first week of the month, during which it ranged from summer heat to winter cold. There was a general freeze on the morning of the 2d. During the third week of the month the temperature conditions were characteristic of mid-summer weather, the mercury ranging well into the 80's. By the middle of the month rain was much needed, the soil being too dry for the germination of seeds, and on some high lands too dry for proper cultivation. Toward the close, vegetation showed the effect of the drought; streams, lakes and wells were becoming low, and the dry weather was being seriously felt in connection with all farm operations. The rainfall was from two to three inches below the normal of the month. The month closed with the season near the normal.

In the circular to correspondents, returnable May 23, the following questions were asked:—

1. How does the present season compare, agriculturally speaking, with a normal season?

2. What is the promise for pastures and mowings, and did fall seeding winter well?

3. How did the bloom of apples, pears, peaches, plums and small fruits compare with the bloom of former years, and has it suffered from frosts?

4. What insects appear to be doing the most damage in your locality?

5. To what extent is spraying practised against insects attacking fruit, and is it on the increase in your locality?

6. Is farm help scarce, or plenty; and what proportion can be called good help?

7. What are the average wages paid farm help in your vicinity, with board? Without board?

8. Will there be any marked changes in the acreage of the usual farm crops, and do you note any new enterprises in the line of agriculture?

Returns have been received from 149 correspondents, and from them the following summary has been compiled:—

THE SEASON.

The month of May has been unusually dry, no rain having fallen up to the time of going to press in many sections of the State, and only scattered showers in any section. The drought has checked vegetation and prevented the germination of seeds, making replanting necessary in some instances; and, although the month opened from ten days to two weeks in advance of the normal, it is doubtful if it is now up to the normal in the progress of farm crops. Rain is urgently needed in all sections, and the prospect of the season's operations is not bright. The fruit bloom was in advance of the normal in all sections.

PASTURES AND MOWINGS.

Fall seeding and grass of all kinds is reported to have wintered unusually well, and the warm weather of early spring gave it a good start. The drought of the present month has, however, practically stopped the growth of grass, and feed in pastures is already becoming short. Even with plentiful rains in future, the hay crop must be a scanty one, upland mowings having begun to turn brown, and the grass on low lands being short and thin. In this emergency farmers should endeavor to supply the lack in the grass crop by planting an increased acreage of silage and forage crops.

FRUIT BLOOM.

The apple bloom is reported to have been a good one for a non-bearing year, as it is in most sections of the State, and has not been materially injured by frost. Peaches did not bloom at all in most sections, owing to damage from the severe cold weather of last December, and many orchards suffered permanent damage from the same cause. Pears, cherries and plums made a full bloom, but the bloom of the latter two fruits was severely injured in many sections, and totally destroyed in some few. The distribution of damage from frost appears to have been very unequal, these fruits escaping entirely in many localities. The earliest strawberry blossoms were also killed in many sections. Berries of all kinds bloomed well.

INSECTS.

Tent caterpillars are more plentiful than for several years, but may be easily controlled, and serious damage prevented. Other insects reported as doing damage are potato bugs, currant worms, canker worms, apple-tree borers, elm-leaf beetles, flea beetles, white grubs, grasshoppers, onion maggots, cut worms, the San José scale and the caterpillars of the gypsy and brown-tail moths.

SPRAYING.

Spraying against insects attacking fruit is not practised to any great extent, except by fruit specialists, but the practice continues to gain slowly in favor in all quarters. This being generally an off year for apples, less spraying will be done in the aggregate by farmers than in 1901.

FARM HELP AND WAGES.

Farm help appears to be rather more difficult to obtain than for several years, due in a measure doubtless to foreigners who have worked as farm laborers in past years beginning farm operations for themselves, either on farms they have purchased or on rented land. The proportion of good help to the general supply appears to be fairly good, though strictly first-class help is always hard to obtain. Twenty dollars per month with board seems to be a fair average of the wages paid, and \$35 per month without board, though little help is employed in this way. For day work, \$1.50 per day seems to be the price commanded at all seasons, instead of only at haying and harvesting time, as was formerly the case.

ACREAGE OF FARM CROPS.

The acreage of farm crops generally remains about as usual, with possibly a slight increase in that of corn and also in that of onions in the Connecticut valley. Owing to the present drought, more than the usual acreage of forage crops and of crops for the silo will probably be put in.

NOTES OF CORRESPONDENTS.

(Returned to us May 23.)

BERKSHIRE COUNTY.

New Marlborough (E. W. RHOADES). — The season is early, but dry. The prospect for pastures and mowings is poor; fall seeding wintered finely. There was a three-fourths bloom on apples and pears; plums and small fruits good; none on peaches. Tent caterpillars and borers are doing some damage. Not much spraying is done, and there is no increase. Farm help is very scarce, and not over half of it is good help. Wages average \$20 per month with board, and \$1.25 to \$1.50 per day without board. There will perhaps be some increase in the acreage of potatoes.

Becket (WM. H. SNOW). — The season has been dry and hot. The outlook for the hay crop and pasturage is very poor; fall seeding wintered well, but is drying up. The fruit bloom was a full average. Tent caterpillars are doing some damage. Spraying is not practised to any extent. Farm help is very scarce, and poor at that. Wages average \$20 per month with board, and \$30 per month without board. There will be some extra crops sown to help out the hay crop.

Lee (A. BRADLEY). — The season is very discouraging, owing to the present drought. Pastures and mowings are in very poor condition; fall seeding wintered well. There was a full bloom of all kinds of fruit, and it was not injured by frost. Tent caterpillars are doing some damage. Spraying is practised to a very limited extent, and is not increasing. Help is plenty, but it is very difficult to get first-class help. Wages average \$20 per month with board, and \$40 per month without board.

West Stockbridge (JAS. S. MOORE). — The present season is not up to the average, on account of hot, dry weather. Unless we get rain soon, pastures on uplands will be a failure. Frosts injured the cherry bloom, but otherwise there is a good prospect for all kinds of fruit. Potato bugs and currant worms are doing some damage, also elm-leaf beetles. No spraying is done in this town. Farm help is scarce, and generally poor. Wages average from \$20 to \$25 per month with board, and from \$30 to \$40 per month without board. There is about the usual acreage of farm crops.

Hinsdale (THOS. F. BARKER). — There has been no rain, except one small shower, for five weeks, and crops are very backward. Pastures and mowings have been very good, but are now drying up; fall seeding wintered well. The fruit bloom was very much below that of last year, but has not suffered from frosts. No insects are doing damage at present. Farm help is scarce, with one-third of it fair help. Wages average from \$18 to \$22 per month with board, and about \$28 without board. More corn and oats than usual have been put in.

Dalton (WESLEY B. BARTON). — The season is about an average one, agriculturally speaking. Pastures and mowings look badly, because of drought; fall seeding wintered well. The fruit bloom was a full average one. Canker worms are doing some damage. Ten per cent of our farmers spray their fruit trees, and the practice is increasing. Farm help is scarce, with 10 per cent of it good help. Wages average \$20 per month with board, and \$1.50 per day without board. Less potatoes than usual and more corn have been put in. Cows are scarce and high, and milk scarce.

New Ashford (ELIHU INGRAHAM). — The season is a poor one, from lack of rain. Pastures and mowings are in very poor condition; fall seeding wintered well. There is a good fruit bloom, with no injury from frost. Tent caterpillars are doing some damage. Spraying is not practised at all. Farm help is plenty, and half of it good help. Wages average \$16 per month with board, and \$1 per day without board.

Florida (E. D. RICE). — The season is about as forward as usual, with farm work more than ordinarily so. Pastures and mowings are in very poor condition, and need rain. The fruit bloom was about half the normal, but there has not been much damage from frost. Spraying against insects attacking fruit is practised by 10 per cent of our people. Farm help is scarce, and one-fourth of it is good help. Wages average \$20 per month with board, and \$1.50 per day without board. Acreage of farm crops about the same as usual; quite a number of farms have been sold during the past year.

FRANKLIN COUNTY.

Colrain (A. A. SMITH). — The season is below the normal, agriculturally speaking. Pastures and mowings are in very poor condition; fall seeding wintered well, but the dry spring has nearly ruined it. There was a full fruit bloom. Spraying against insects attacking fruit is practised to a considerable extent, and is on the increase. Farm help is scarce, and a very small proportion of that available is good help. Any price asked is paid for good help, both with and without board.

Shelburne (GEO. E. TAYLOR, Jr.). — The season is about a week earlier than the normal. Pastures and mowings are very dry at present; grass wintered very well. There was about an average fruit bloom; peaches injured by frosts. Tent caterpillars are doing some damage. Spraying is not largely practised, but it is slowly increasing. Farm help is very scarce, and very little of it is reliable help. Wages average \$20 per month or better with board, and from \$30 to \$40 per month without board.

Ashfield (CHAS. HOWES). — The spring opened earlier than usual, but was at first dry and cold, and later dry and hot. Pastures and mowings are drying up, and the prospect for the hay crop is poor; fall seeding wintered well. The fruit bloom was very fine, except on peaches and some varieties of small fruits. Tent caterpillars are doing some damage. Spraying is practised to a limited extent, and is on the increase. Farm help is very scarce, and it is hard to get good help. Wages average \$1 per day with board, and \$1.50 per day without board. More corn will be planted than usual, and more forage crops raised.

Whately (FRANK DICKINSON). — The season is a week earlier than usual, and very dry. Pastures and mowings are badly dried up; all grass wintered well. Apples gave a good bloom; other fruits light. Spraying is very little practised. Farm help is scarce, and not more than one in four or five is good help. Wages average \$18 to \$20 per month with board, and \$1.50 per day without board.

Sunderland (J. M. J. LEGATE). — The season is very dry, and all crops are at a standstill. Feed in pastures is very short, and the hay crop will be very light; fall seeding wintered well, but went the way of the rest. There was about an average fruit bloom; apples do not seem to have suffered from frost, but plums and peaches were ruined. A few tent caterpillars have appeared. No spraying is done here. There is no farm help to be hired at the present time. Wages average from \$18 to \$23 per month with board, and \$1.50 per day without board. There has been a heavy increase in the acreage of onions, and a slight increase in that of tobacco. The scarcity of farm help is due to the increase in onion acreage, farmers having let land to the Poles for raising onions, until they have all they can do without working out by the month.

Northfield (THOS. R. CALLENDAR). — The season is early, but dry. Unless rain comes soon, pastures and mowings will be very poor; fall seeding wintered well. Fruit generally bloomed well. No insects are doing damage as yet. Very little spraying is done. Farm help is very scarce, but fairly good. Wages range from \$18 to \$25 per month with board, and from \$1.50 to \$2 per day without board.

Wendell (N. D. PLUMB). — The season is very forward, but the ground is too dry for seed to germinate. Pasturage is very backward, also mowings and seeding, as we have had no rain since April 20. Apples and pears look promising. But very little spraying is done. Good help is very scarce, and there is a good demand for help, good, bad and indifferent. Wages range from \$18 to \$25 per month with board, and from \$1.50 to \$1.75 per day without board. There is an increased acreage of oats.

Orange (A. C. WHITE). — Spring opened very early, but the present dry weather is spoiling all. Pastures and mowings are too dry to make any calculation as to the prospect. There was the normal fruit bloom, with no damage from frost. Currant worms and potato bugs are doing some damage. Spraying is practised to a very limited extent. Help is scarce. Wages average \$20 per month with board, and \$1.50 per day without board.

HAMPSHIRE COUNTY.

Greenwich (WM. S. DOUGLAS). — The season is backward, and very dry. The promise for pastures and mowings is poor, on account of the continued dry weather. The fruit bloom was very light, and it has suffered from frost. Tent caterpillars and currant worms are doing some damage. Spraying is but little practised. Farm help is scarce, and but a small proportion of it is good help. Wages average \$25 per month with board, and \$1.50 per day without board.

Amherst (WM. P. BROOKS). — The season is from two to three weeks earlier than usual, but exceptionally dry and hot. All fall seeding wintered exceptionally well, but the present outlook is for a very light hay crop and scanty pastures, save on rich and moist soils. Apple bloom uneven, but on the whole very abundant for an odd year; pears full, but many varieties injured by frost; peaches no bloom; plums full, but badly hurt by frost, especially Japanese plums; raspberries, blackberries and currants full; strawberries, early bloom destroyed, but doing well except on driest soils. Tent caterpillars are doing some damage. Spraying is not much practised, and is increasing but slowly. Farm help is very scarce, and there are but few good men. Wages range from \$15 to \$30 per month with board. The acreage of onions is increased from 12 to 15 per cent, and they have generally come up well. Shade tobacco setting has begun.

South Hadley (H. W. GAYLORD). — The season opened very early, but everything seems to be at a standstill now. Fall seeding wintered well, but is making no growth; pastures and mow-

ings offer a very discouraging prospect. The bloom on cherry and pear trees was killed by frost, and a large percentage of apple and plum trees blossomed only on the south side. Tent caterpillars are our most plentiful insect. Spraying is not practised outside of village lots, and is not increasing. Farm help is very scarce. Wages average \$18 to \$20 per month with board, and \$1.50 per day without board. More forage crops than ordinarily have been put in.

Southampton (C. B. LYMAN). — The season promised well, but want of rain is now a serious drawback. Pastures and mowings are in poor condition; fall seeding wintered well. The fruit bloom was full for an odd year; pears, peaches and plums were killed by frost. Tent caterpillars are doing some damage. Not much spraying is done here. Farm help is scarce, and about one-fourth of it good help. Wages average \$19 to \$22 per month with board, and \$1.50 per day without board. No rain for four weeks.

Chesterfield (HORATIO BISBEE). — The season is a poor one, owing to drought. Pastures and mowings are in poor condition; fall seeding wintered well. There was a fair fruit bloom. Tent caterpillars are doing some damage. Spraying is not practised at all. Farm help grows scarcer and poorer each year. Wages average from \$18 to \$22 per month with board, and from \$1.25 to \$1.50 per day without board.

Williamsburg (F. C. RICHARDS). — The season is earlier than usual, but is very dry. Pastures and mowings started well, but are badly affected by drought. Medium bloom of apples, plums and cherries; heavy bloom of pears; no peaches. Spraying is hardly practised at all, and is not increasing. Farm help, both good and poor, is very scarce. Wages average \$18 to \$20 per month with board, and from \$30 to \$35 per month without board.

Cumington (S. W. CLARK). — The season is very dry, with no rain for five weeks, and very little cloudy weather. Grass is growing very thin; fall seeding wintered well. Fruit bloom normal, with no damage from frost. Tent caterpillars are doing some damage. Spraying is very little practised, not as much as a few years ago. Farm help is rather scarce, mostly Polish, and pretty good. Wages average \$20 per month with board, and \$1.25 to \$1.50 per day without board. More corn than usual is being put in for the silo.

HAMPDEN COUNTY.

Tolland (E. M. MOORE). — The season opened two weeks earlier than usual, but owing to drought, crops are about normal. Pastures and mowings are pretty well dried up; fall seeding winter-

killed somewhat. Apple bloom about 75 per cent; pears, plums and small fruits full. Tent caterpillars are more plenty than usual. Spraying is not practised to any extent in this vicinity. Farm help is scarce. Wages average \$20 per month with board, and \$1.25 to \$1.50 per day without board. There is no marked change in the acreage of farm crops. No rain of any amount has fallen since April 15.

Russell (E. D. PARKS). — The season is about two weeks in advance of the normal. The prospects are that there will be no feed in pastures, as they are drying up from lack of rain. There was a very full fruit bloom, and the frost did not injure it. Tent caterpillars are doing some damage. Spraying is but little practised, but is increasing. Farm help is scarce, and not over one-fourth of it is good help. Wages average \$1 per day with board, and \$1.50 per day without board. We have had no rain for six weeks or more.

Westfield (C. F. FOWLER). — The season is earlier than usual, but the dry weather of the past two weeks has checked plant growth. Pastures are looking poorly, and grass is drying very badly; fall seeding stands well, but is small. Fruit, with the exception of peaches, bloomed very full, but suffered from frosts. Tent caterpillars are more plentiful than usual. Spraying is not practised much in this section. Help is scarce. Wages average from \$20 to \$25 per month with board, and \$1.50 per day without board. There is a slight decrease in the acreage of tobacco.

West Springfield (J. N. BAGG). — We are suffering from an unprecedented drought. Grass is light and fall seeding fair. The fruit bloom was inferior. Tent caterpillars are doing some damage. Very little spraying is done. Farm help is scarce. Wages average \$16 per month with board, and \$25 per month without board. Hundreds of bushels of onions have been plowed in in this vicinity.

East Longmeadow (J. L. DAVIS). — The season was cold and backward at first, and is now very dry. Pastures and mowings are in the poorest condition ever seen. Frost hurt the peach bloom, but other fruits made a full bloom. About one in twenty of our people spray. Farm help was never so scarce, and consequently the quality is of the poorest. Wages average \$20 per month with board, and \$1.50 per day without board. There will be a large amount of oats, Hungarian grass, millet and fodder corn sowed.

Wilbraham (E. C. CLARK). — The season is about a normal one as to forwardness. Pastures and mowings are drying up;

fall seeding wintered fairly well. Fruit trees bloomed full, but most of the fruit buds were destroyed by frost. There are large numbers of tent caterpillars and currant worms doing damage, and potato bugs have appeared in large numbers on early potatoes. Farm help is scarce, and one-third of it good help. Wages average \$22 per month with board, and \$35 per month without board. Spraying against insects attacking fruit is on a decline this year. Not as much planting of farm crops as usual has been done, on account of the scarcity of help.

Monson (F. D. ROGERS). — The season is forward, but very dry. Pastures are yielding but little feed; fall seeding wintered well. The fruit bloom was light; practically no peaches; and all fruits except apples suffered from frosts. Very little spraying has been done. Farm help is very scarce, and most of it is fairly good. Wages average \$20 per month with board, and \$30 per month without board, with house and fuel. There will be an increased acreage of corn and forage crops.

Holland (F. WIGHT). — The season is earlier than usual, but very dry. Feed in pastures is very poor and is drying up, and mowings are the same. The fruit bloom was not up to an average bloom, and was injured by frost in some places. Tent caterpillars are doing some damage. Spraying is not practised to any great extent, and is not increasing very rapidly. It is almost impossible to get any farm help, and all that offers is considered good. Wages average \$1 per day with board, and \$1.50 per day without board.

WORCESTER COUNTY.

Dudley (J. J. GILLES). — All crops are suffering severely from drought. Pastures are yielding very little feed, and mowings are at a standstill. Apples bloomed well for an off year; frost did some damage to peaches and early strawberries. Tent caterpillars and striped squash bugs are doing some damage. Spraying is practised to but a limited extent, and is not on the increase. Wages for farm help average from \$18 to \$20 per month with board, and 15 cents per hour without board. There are no marked changes in the acreage of the usual farm crops.

Brookfield (F. E. PROUTY). — The season is more forward than usual, but is dry. The dry weather is injuring pastures and mowings; fall seeding looked well early in the season. The fruit bloom in this section was generally not over one-third of a full bloom. Tent caterpillars are doing some damage. Spraying is practised but little, and does not increase much. Farm help is

rather scarce, with half of it good help. Wages range from \$20 to \$25 per month with board, and average \$1.50 per day without board.

North Brookfield (J. H. LANE). — The season is at least two weeks earlier than the normal in foliage, but is too dry for growth. Pastures are drying up, as are mowings to some extent. The apple bloom was light, that of pears heavy. Tent caterpillars are more plentiful than ever before. Farm help is very scarce, and not over 10 per cent of it is good help. Wages range from \$20 to \$35 per month with board, and from \$1.50 to \$1.85 per day without board. More silage crops than usual will be grown.

Petersham (S. B. COOK). — The season is not up to the normal, on account of the exceeding drought. Pastures and mowings are parched and dry, and the promise is poor. Tent caterpillars are plenty, and are the chief insect doing damage. Very little spraying done, and it is not on the increase. Farm help is scarce, and one-third of it is good help. Wages average \$1.50 per day with board, and \$1.75 without board. The acreage of potatoes and corn will be increased.

Royalston (C. A. STIMSON). — The season is hot and dry. Pastures and mowings have dried up badly; fall seeding wintered well. There was a medium fruit bloom, and no damage from frost. Spraying is not practised to any extent. Farm help is scarce, and one-fourth of it is good help. Wages average \$1 per day with board and \$1.50 per day without board.

Gardner (A. F. JOHNSON). — The season is a little earlier than the normal. Pastures and grass look badly, and are much in need of rain. The apple bloom was one-fourth of the normal bloom; full bloom on wild berries. Spraying is not practised in this locality. Farm help is scarce. Wages average from \$20 to \$25 per month with board, and \$1.50 per day without board.

Fitchburg (JABEZ FISHER). — The fruit bloom was about eight days earlier than the average for forty-seven years. Fall seeding wintered unusually well. The fruit bloom was fair only, and has suffered but little from frost. Tent caterpillars are doing some damage. There is a slight increase in spraying, but the practice is not general. Farm help is very scarce. Wages average \$20 per month with board, and \$1.50 per day without board. The drought is intense for the time of year; seeds remain unsprouted and grass is drying up.

Harvard (JOHN S. PRESTON). — The season is not very favorable, owing to want of rain. Pastures and mowings are very short; fall seeding wintered well. All fruits made a fair bloom except peaches. Tent caterpillars are very plentiful. Spraying

against insects attacking fruit is on the increase every year. Farm help is scarce, and good help very much so. Wages average from \$20 to \$25 per month with board, and \$1.70 per day without board. More attention is given to silo crops every year.

Sterling (H. S. SAWYER). — The season is more forward than usual. Pastures and mowings are suffering for rain; fall seeding wintered poorly. There was a very full bloom of apples and pears; peach and plum bloom much injured by frosts. Tent caterpillars are doing some damage. Spraying is but little practised, and is not increasing. Good farm help is very scarce. Wages average \$18 per month with board, and \$1.50 per day without board. There will be a larger acreage of forage crops than usual.

Worcester (S. A. BURGESS). — The present season compares very favorably with a normal one. The promise for pastures and mowings is good, if we have rain; fall seeding wintered well. The fruit bloom was superior, and there has been no damage from frost. Tent caterpillars are doing some damage. Spraying is practised to some extent, and is increasing. Farm help is scarce, and about half that available is good help. Wages average \$23 per month with board, and \$1.50 per day without board. There will be no changes in the acreage of the usual farm crops.

Millbury (HERBERT McCracken). — The season opened early, and has been exceptionally favorable for farm work. Fall seeding wintered well, but rain is needed for pastures and mowings. There was an average fruit bloom, with some damage from frost. Caterpillars are doing some damage. No spraying is done here. Farm help is scarce, and not over 25 per cent of it good help. Wages average \$25 per month with board, and \$1.75 per day without board.

Hopedale (DELANO PATRICK). — Vegetation started somewhat earlier than usual this season. The uncommon drought must cause poor pasturage and a light hay crop; fall seeding wintered well. There was an average fruit bloom, but peaches were badly damaged by frost. Tent caterpillars are in full supply. Spraying has never been much practised against insects attacking fruits. Farm help is scarce, and but a small part of it good help. Wages average \$1.50 to \$1.75 per month without board. There will perhaps be a slight reduction in the acreage of the ordinary farm crops.

MIDDLESEX COUNTY.

Hopkinton (W. V. THOMPSON). — The season is earlier and dryer than usual. Pastures and mowings are very dry; fall seeding wintered well. Apples made a full bloom for the odd year;

peaches none; pears, plums and small fruits full; early strawberry blooms suffered from frost. Tent caterpillars are doing some damage. Spraying is not practised at all against insects attacking fruit. Not much help is hired in this locality.

Framingham (J. S. WILLIAMS). — The season has been unusually hot and dry. Pastures will be short and hay light, unless rain comes soon; fall seeding wintered in first-class shape, and promised well. There was an unusually large fruit bloom, but it was ruined by frosts. Tent caterpillars are numerous. Considerable spraying is done, and the practice is growing in favor. Farm-help is scarce, and about half of it is poor, incompetent help. Wages average from \$20 to \$25 per month with board, and from \$35 to \$40 per month without board. More ensilage crops will be sown this season than ever before.

Marlborough (E. D. HOWE). — The season is about two weeks earlier than the normal, with rather too little rain. Pastures will soon be very short, and most mowings are light; fall seeding wintered well. The fruit bloom was 80 per cent for apples, 100 per cent for pears, nothing for peaches, 75 per cent for plums and 80 per cent for small fruits, and there has been no injury from frosts. Currant worms and tent caterpillars are doing some damage. About two-thirds of our farmers spray, but the practice is not increasing. There is a fair supply of farm help, with about half of it good help, these coming largely from Nova Scotia. Wages average from \$20 to \$25 per month with board, and from \$9 to \$10.50 per week without board. There will be rather more corn than usual raised.

Stow (G. W. BRADLEY). — The season is about an average one. Pastures and mowings are looking well at present, but need rain soon. The fruit bloom was not as heavy as usual, and the early bloom was killed by frosts. Tent caterpillars are doing some damage. Wages for farm help range from \$12 to \$20 per month with board, and from \$1.25 to \$1.75 per day without board.

Townsend (G. A. WILDER). — The season is about a normal one. The prospect for pastures and mowings is poor, unless rain comes very soon; fall seeding wintered well. The fruit bloom was very light, and frost caused great damage. Tent caterpillars are doing some damage. Spraying is hardly practised at all. Farm help is scarce, and one-third of it good help, the rest "green." Wages average \$18 per month with board for young help, and \$25 per month with board for men, with \$1.50 per day the prevailing price without board.

Groton (JAS. P. FITCH). — The season is a good one, though somewhat dry. Pastures and mowings are looking well; fall seed-

ing wintered well. The fruit bloom compares favorably with a normal bloom, and has not suffered from frost. Tent caterpillars are doing some damage. Spraying is decreasing. Farm help is scarce, with half of that available good help. Wages average \$20 per month with board, and \$35 per month without board.

Westford (J. W. FLETCHER). — The season is about a normal one. Pastures are suffering from drought; fall seeding wintered well. The fruit bloom was good in this section, but was somewhat injured by frosts. Spraying is not much practised against insects attacking fruit. Farm help is scarce. Wages average from \$20 to \$25 per month with board for good help.

Concord (WM. H. HUNT). — May has been a very dry month. Fall seeding did well, but mowings and pastures are in need of rain. Apples had a medium bloom, pears light, peaches none at all. Spraying is increasing slowly, but few farmers practise it as yet. Good farm help is scarce, and only a small proportion of the supply is really good. Wages average about \$20 to \$25 per month with board, and \$35 per month without board, with green men receiving less.

Winchester (S. S. SYMMES). — May has been very dry and hot, and foliage is more forward than usual. Pastures and many mowings are practically dried up; fall seeding wintered well. No peach bloom; bloom of other fruits heavy. Gypsy moths are here in millions, and have already denuded some trees. There is not much spraying done, but nevertheless more than ever before. Good help is very scarce indeed. Wages average \$22 per month with board, and \$40 per month without board. The acreage of many farm crops will be less than heretofore. No rain has fallen since most crops were planted, and a great deal of the seed has not come up, and cannot until rain falls.

Stoneham (J. E. WILEY). — The season is a fair average one. The promise for pastures and mowings is poor; fall seeding wintered well. The fruit bloom was very heavy, and has not been damaged by frosts. Brown-tail moth caterpillars are doing some damage. Half our farmers spray, and the practice is increasing. Farm help is scarce, and about one-third of it good help. Wages average \$20 per month with board, and \$10 per week without board.

ESSEX COUNTY.

Haverhill (EBEN WEBSTER). — The season is about a normal one, except for the drought. Pastures are in good condition, and mowings fair; fall seeding wintered well. There was about a normal fruit bloom, with the exception of peaches, which did not bloom at all. Tent caterpillars and canker worms are doing

some damage. Spraying is rather on the increase. Good help is scarce. Wages average \$20 per month with board, and \$1.50 per day without board.

Groveland (A. S. LONGFELLOW). — The season is earlier than usual. Fall seeding wintered well; pastures and mowings are in good condition, but will need rain soon. Bloom on apples and pears good; some damage from frosts. Canker worms and tent caterpillars are doing some damage. Less than half our fruit trees are sprayed, but the practice is increasing. Farm help is scarce, and perhaps 10 per cent of it is good help. Wages average \$20 per month with board, and \$1.50 per day without board.

Andover (M. H. GOULD). — The season is much below the normal in rainfall. Pastures and mowings are in very poor condition; fall seeding wintered well. Apple bloom poor; pears good; peaches and plums hurt by frost. Tent caterpillars are doing some damage. Very little spraying is done, but the practice is increasing. Farm help is scarce, with about 5 per cent of it good help. Wages average \$22 per month with board, and \$1.50 per day without board.

Rowley (D. H. O'BRIEN). — The season is rather backward. The outlook is poor for mowings and pastures; fall seeding wintered well. The fruit bloom was about half of a full bloom; frost damaged peaches slightly. Tent caterpillars are doing some damage. About three-fourths of the orchards are sprayed, and spraying is increasing. Farm help is scarce, and about one-third of it is good help. Wages average \$22 per month with board, and \$1.50 per day without board.

Topsfield (B. P. PIKE). — The season compares very favorably with the normal, and most crops are looking well. Fall seeding wintered well and started well, but has suffered from drought. Pears and plums bloomed very well; no peach bloom; apples good for an off year. Not much spraying is done. Farm help is scarce, and not much of it is good. Wages average \$20 per month with board, and \$1.75 per day without board. Rather more corn than usual will be put in. Some farmers are not putting in any more crops than they can care for themselves, on account of the scarcity of help.

Danvers (C. H. PRESTON). — The season is an average one, agriculturally speaking. The prospect for pastures and mowings is poor; fall seeding wintered well. Apples, pears and plums made a light bloom, and suffered from frosts. Tent caterpillars and brown-tail moths are doing some damage. Spraying is largely practised, but is not increasing. Farm help is scarce. Wages average \$21 per month with board, and \$37 per month without board.

NORFOLK COUNTY.

Norwood (Hon. F. A. FALES). — The season is cold, dry and late. The promise for pastures and mowings is not the best; fall seeding wintered well. The fruit bloom was about 25 per cent of a normal bloom; strawberry blooms damaged by frost. Tent caterpillars are doing some damage. Spraying is not practised to any extent, and is not increasing. Farm help is very scarce, and about one-third of it is good help. Wages average \$22 per month with board, and \$2 per day without board.

Wulpole (E. L. SHEPARD). — The present season is not up to the normal, being cold and wet at first, and now hot and dry. Pastures and mowings begin to suffer badly for rain; fall seeding wintered fairly well. Apples made a very good bloom for an off year; other fruit good; some small fruits hurt by frost. Tent caterpillars and white grubs are doing some damage. Not much spraying is done in this locality. Farm help is scarce, and most of it rather poor. Wages average \$1.50 per day without board.

Norfolk (A. D. TOWNE). — The prospect is for a late, poor season, as we had heavy, late frosts, and it is very dry at present. There is very little feed in pastures, and if the drought continues the hay crop will be light; fall seeding wintered well. Apples made a light bloom; peaches, plums and pears killed by frost. Tent caterpillars are more numerous than for several years. Very little spraying is done, but the practice is somewhat increasing. Farm help is scarce, and good help hard to find at any price. Wages average from \$20 to \$22 per month with board, and \$1.50 per day without board. The acreage of farm crops is rather less than common.

Millis (E. F. RICHARDSON). — The season is better than an average one. Pastures and mowings looked well, but are drying up from lack of rain. The fruit bloom was exceedingly light. Tent caterpillars are doing some damage. Spraying is practised somewhat. Farm help of all kinds is very scarce. Wages average \$25 per month with board, and \$9 per week without board. More corn than usual will be grown.

Stoughton (CHAS. F. CURTIS). — The season is fully two weeks in advance of the normal. Pastures and mowings are beginning to suffer from drought. The fruit bloom is fully up to the average, with some loss from frosts. I have never seen as few insects and as many birds as this season. Spraying is practised to a very limited extent, and is increasing but slowly. Farm help is very scarce, and good help is not to be had. Wages average \$30 per month with board, and \$1.75 per day without board.

Franklin (C. M. ALLEN). — The present season is a very poor one, agriculturally speaking. There will not be over a half crop of hay; fall seeding wintered unusually well. Fruit of all kinds made a light bloom, and there was no peach bloom. Some damage is reported from the San José scale; other insects present in about the usual numbers. But little spraying is done, but the practice is increasing. Farm help is scarce, with practically no good help. Wages average \$20 per month with board, and \$1.50 per day without board.

BRISTOL COUNTY.

Easton (H. M. THOMPSON). — Owing to the severe drought, the prospect for pastures and mowings is not very encouraging. The fruit bloom was encouraging, and no damage from frosts is thus far noticeable. Grasshoppers are doing some damage. Spraying against insects attacking fruit is very seldom practised. Farm help is scarce, and half of it is good help. Wages range from \$15 to \$30 per month with board, and from \$15 to \$60 per month without board. The raising of cucumbers under glass seems to be on the increase. Crops planted fully two weeks ago and a considerable amount four weeks ago have not had a drop of rain.

Norton (WM. A. LANE). — The season is very dry, otherwise about the same as last year. Pastures started well, and fall seeding looks well, but needs rain. There was a small fruit bloom. Potato bugs are doing some damage. Very little spraying is done against insects attacking fruit. Farm help is scarce, and there is very little good help. Wages average \$20 to \$30 per month with board, and \$1.50 to \$2 per day without board. The acreage of farm crops is about the same as last year.

Attleborough (ISAAC ALGER). — The season is much below the normal, agriculturally speaking. Pastures and mowings are in very poor condition, as is also fall seeding. There was a small bloom of all fruits except pears. Spraying is not much practised, and is not increasing. Wages average \$1 per day with board, and \$1.50 per day without board. There will be no marked changes in the acreage of the usual farm crops.

Swansea (F. G. ARNOLD). — The season is about a normal one. Pastures and mowings started well, but dry weather has pinched them; fall seeding wintered well. There was a full fruit bloom on all except peach trees, which were injured by the cold winter. Help is scarce, but what we get is three-fourths of it good help. Wages range from \$15 per month with board for green men, to \$25 per month for the best; without board they are \$1.50 per day,

or \$30 per month with tenement. More corn and tomatoes than usual will be put in, and less cabbage.

Dartmouth (L. T. DAVIS). — Pastures are about in average condition; fall seeding wintered very well. The fruit bloom was heavy in most cases, but was much injured by frosts. Tent caterpillars are doing some damage. Spraying is not as much practised as it ought to be, but is rather on the increase. Farm help is scarce, and most of it poor. Wages average from \$20 to \$30 per month with board, and \$1.50 per day without board.

Acushnet (M. S. DOUGLAS). — The season is not up to the normal at present. Pastures are short; meadows are in bloom, with no length of grass; no rain for forty days. The fruit bloom was good, except for peaches, which winter-killed; frosts in May killed the bloom on plums, cherries and currants. Tent caterpillars and potato bugs are doing some damage. Spraying is practised quite extensively, and is on the increase. Farm help is very scarce, and there is no good help. Wages average \$20 per month with board, and \$1.50 per day without board for a nine-hour day. More field corn has been planted than formerly.

PLYMOUTH COUNTY.

Marshfield (J. H. BOURNE). — The present outlook is not as favorable as usual. Pastures and mowings are short, and without doubt will remain so. Scarcely any peach bloom; pears and plums full, also strawberries; apples very variable, some very full, others few, especially Baldwins. Tent caterpillars have appeared in swarms. Very little spraying is done, and the practice is not increasing. Farm help will be plenty until June 20, then probably scarce; one-fourth of it good help. Wages average \$18 to \$25 per month with board, and \$1.50 to \$1.75 per day without board.

Hanson (F. S. THOMAS). — The season is early, and compares well with the normal. Pastures and mowings are in good condition, but need rain soon. The fruit bloom was good; this is the off year for winter apples, but they bloomed quite well. Potato bugs are appearing, and tent caterpillars are doing some damage. Spraying is not much practised, and is increasing but little. Farm help is plenty, and mostly fair help. Most farmers hire help by the day as they need it, at from \$1.50 to \$2.50 per day. There is an increase in the acreage of farm crops.

Plympton (WINTHROP FILLEBROWN). — The present season is much earlier than usual. Pastures and mowings are in prime

condition, but will suffer if rain does not come soon; fall seeding wintered well. The fruit bloom was exceptional, and has not suffered from frost as yet. Tent caterpillars and potato bugs are doing some damage. Spraying is practised only to a slight extent in this locality. Farm help is scarce, and less than half of it is good help. Wages average \$25 per month with board, and \$1.50 per day without board. There are no marked changes in the acreage of general crops, but milk production is on the increase. Indications are favorable for a crop of cranberries.

Carver (J. A. VAUGHAN). — The season is more forward than usual. Fall seeding wintered well, and grass started earlier than usual; rain is needed on high ground. Tent caterpillars are doing some damage. Spraying is practised on most of the cranberry bogs which cannot be quickly flooded in summer. Help of all kinds is scarce. Wages average \$20 per month with board, and \$1.65 per day without board. More cranberry bog is being made than usual, and less of the garden fruits and vegetables cultivated.

Wareham (A. B. SAVARY). — Owing to dry weather, the season is late. The promise for pastures and mowings is poor; fall seeding wintered well. The fruit bloom is light, and frosts have done some damage. Tent caterpillars are doing some damage. Spraying is hardly practised at all. Farm help is rather scarce, and about one-half of it is good help. Wages average \$20 per month with board, and \$1.50 per day without board. There will be a few more potatoes planted than usual.

Mattapoisett (E. C. STETSON). — The season is a little earlier than usual. The prospect for pastures and mowings is good, and fall seeding wintered fairly well. Pears and apples made a good bloom; peaches poor; no damage from frosts. Tent caterpillars are doing some damage. Spraying is practised but little, if at all. Wages average \$20 per month with board, and \$1.50 per day without board. There will be no marked changes in the acreage of the usual farm crops.

BARNSTABLE COUNTY.

Bourne (D. D. NYE). — The season is a favorable one. At present, owing to dry weather, pastures and mowings look poorly. There was a good fruit bloom, and it did not suffer from frost. Tent caterpillars are doing some damage. Spraying is practised to a small extent, and is not on the increase. Farm help is scarce, but averages good as to quality. Wages average \$20 per month with board, and \$2 per day of nine hours. Most of our people,

especially the farmers, have abandoned a good deal of farm work, and are attending to summer people and small gardens.

Sandwich (R. F. ARMSTRONG). — The season is early but dry. Pastures and mowings are suffering severely from drought; fall seeding winter-killed badly. The fruit bloom was very heavy, but that of peaches and plums was destroyed by frost. Potato beetles and tent caterpillars are doing some damage. Very little spraying has been done in past years, but I think this year will show some increase. Farm help is scarce, and there is little good help to be had. Wages average \$20 per month with board, and \$1.50 to \$2 per day without board. There is a slight increase in the acreage of farm crops.

Barnstable (JOHN BURSLEY). — The season is a little earlier than usual, but is very dry, preventing the germination of seeds. Grass is short everywhere. The fruit bloom was very full, and there has been but little damage from frosts. Tent caterpillars are doing some damage. Probably not over 5 per cent of our people spray their fruit trees. Farm help is scarce and not over 10 per cent of it good help. Wages average \$20 per month with board, and 17½ cents per hour without board. Probably a little more corn than usual will be planted.

Harwich (A. N. DOANE). — The season is more backward than usual. The prospect for pastures and mowings is very poor, on account of the long drought. Tent caterpillars are doing some damage. Not much spraying is done, except on cranberry bogs. Farm help is scarce, but about all of it is good help. Wages average \$20 per month with board, and from \$35 to \$40 per month without board. There will be a smaller acreage of farm crops than usual.

Eastham (J. A. CLARK). — The season was about one week earlier than usual the first of May. Dry weather is affecting pastures and mowings; fall seeding winter-killed. All fruit trees made a full bloom, and were not injured by frosts. Spraying is not practised to any great extent, but is on the increase. Farm help is scarce just now, as it is asparagus season. Wages average \$25 per month for good help with board, and from \$35 to \$40 per month without board. Prices for asparagus have been fairly good.

Truro (D. E. PAINE). — The season is a fair one, agriculturally speaking. Pastures and mowings are suffering for want of rain. Fruit trees of all kinds bloomed well. Tent caterpillars are doing some damage. Very little spraying is done. Farm help is scarce, but fairly good. Wages average \$15 per month with board, and from \$25 to \$30 per month without board.

DUKES COUNTY.

West Tisbury (GEO. HUNT LUCE). — The season is about an average one. Pastures and mowings promise fairly well. There was about an average fruit bloom. Tent caterpillars are doing some damage. Spraying is practised to some extent, but is not increasing very rapidly. Farm help is scarce, with perhaps one in five good help. Wages average \$20 per month with board, and \$1.50 per day without board. Hop culture is rather on the increase.

BULLETIN OF MASSACHUSETTS BOARD OF AGRICULTURE.

FRUITS FOR THE HOME GARDEN: VARIETIES AND CULTURE.

By Prof. F. A. WAUGH, *Professor of Horticulture, Massachusetts Agricultural College.*

Fruit growing has unquestionably made great progress in the United States and Canada during the last decade. This progress has been not only scientific, but practical. We know more about the principles involved, and we also understand better why these principles should be applied.

Somewhat curiously, however, this improvement has been confined almost wholly to the growing of fruit in large quantities for market. The whole tendency of the time has been toward the cultivation of large orchards, consisting of only one or two varieties of fruit. All the methods of cultivation have been bent to this purpose. All the discussions of practical men and all the investigations of scientists have been faced in this direction. The growing of fruit in a small way in the home has been neglected and almost forgotten. This is quite a different matter, and one in which we have made no progress. In fact, we are not so well off now as were our fathers in the time of Marshall P. Wilder, Hovey and the Downings.

There are many indications, however, that we are coming back to a greater appreciation of the home fruit garden. It is much to be hoped that many farmers and suburban families will grow more fruit for themselves, and without an idea of making the business a profitable market venture.

In choosing varieties for a home garden, one must make his selection according to principles essentially different from those which govern him in setting out a commercial orchard. (1) In the first place, the home orchard requires a large number of varieties. The commercial growers now commonly confine themselves to two or three at the utmost, whereas every man would like to have his table supplied with a large variety and through a

longer season. (2) This means that the selection of varieties for the home garden should be so arranged as to produce this required succession. (3) In the home garden quality will be considered chiefly, whereas in the commercial orchard prolificacy in bearing and high color of the fruit are primarily sought for. (4) Old favorites will be especially considered in the home garden. Every man has some particular apple which he fancies especially, perhaps on account of some old association or for some less obvious reason. All such varieties should be cherished in the home garden, although it would be a fatal mistake to plant them for profit. (5) As regards apples particularly, one more observation may be made, *i.e.*, that a much larger percentage of summer and autumn varieties may be planted in the home garden than could be justified in the market orchard.

With these principles in view, I will now name those fruits amongst which the grower would most naturally choose in making up a list for a small home garden in Massachusetts. It should be understood, of course, that I do not recommend the planting of this entire number, nor, indeed, do I insist upon any particular variety. I have already said that every man must follow his own preference and judgment very largely. When one is planting for commercial purposes, he has to meet the requirements of the market; when he plants for himself, he suits his own taste.

APPLES.

Red Astrachan is perhaps one of the first apples to be ready for eating in this latitude. It is of very brisk and tart flavor, and answers the purpose for producing the yearly cases of apple colic so much required in a thriving family of farm boys. For this good work it should not be overlooked. It makes good applesauce, and is attractive for some other reasons, but its chief merit is its earliness.

Early Harvest is usually held to be an apple of much better quality than the last, although there is a difference of opinion on this point. It is a good eating apple, however, and fairly good for cooking, so that it falls into the succession very nicely.

Williams (Early Williams or Williams Favorite): This is one of the best apples of the season. Personally, I would almost as soon save my appetite until Williams is ready, as to spoil it with Red Astrachan and Early Harvest. Williams forms a good hardy tree, which bears well. The fruit is medium size, of good form and highly colored. This variety ought never to be overlooked in making up a family orchard.

Grimes (Grimes Golden) is highly regarded in the west, and,

though comparatively less popular here, is still a favorite with many good old-fashioned people. The tree is not a very thrifty grower, although it is not subject to diseases. It is a fairly prolific bearer. The fruit is medium size, bright, clear yellow, aromatic and of high quality. It is excellent for baking or for making pies.

McIntosh (McIntosh Red) is gaining in popularity in New England. It is now quite largely planted in the northern New England States, and is gaining friends in Massachusetts. The tree is remarkably thrifty and clean, an upright grower and an early and fairly heavy bearer. The fruit is large, fair, highly colored, with aromatic white flesh, very juicy and sprightly. It is considerably subject to the attacks of the apple scab, and requires thorough spraying in order to secure good results.

Gravenstein is one of the best of the autumn apples, and is suitable for every purpose. It is good to eat out of hand, excellent for pies and unsurpassed for baking. The tree is vigorous, thrifty and upright, and bears well. It succeeds in nearly all parts of Massachusetts.

Mother is a fine apple, which is rather rarely found, but which is worth the extra trouble required in its cultivation. It is rather shy in bearing, and somewhat subject to the attacks of the railroad worm.

Primate is another early fall apple of superior quality, which is rarely planted. It is somewhat difficult to cultivate, and the fruit is so tender that it cannot be sent to market, but it is a dessert fruit of the first rank.

Porter is a favorite apple in some parts of New England, and succeeds in certain localities in Massachusetts; in other localities it does not seem to be a success. It is especially good for cooking, although it is also an excellent dessert fruit.

Harvey (Fall Harvey) is an old Massachusetts apple, now most popular in Maine, but one well worth growing in many parts of this State also. It is a medium large, oblate-conic, rich yellow fruit, with a blush in the sun. It ripens in October, and is good for eating or for cooking.

Fall Pippin, in the localities where it succeeds, is one of the best of all autumn fruit. It is not highly colored and does not ship well, so that it is not a popular market variety; but when nicely grown and eaten at home it can not be surpassed. It is one of the best of all apples for baking.

King (King of Tompkins County) is generally recognized as one of the standard market varieties, although not one of the leaders; still, it is a good variety for home use. Its fine color and aroma and its high quality recommend it to all fruit lovers. The tree is

not very thrifty and the variety does better if top-grafted on Spy, Ben Davis or Tolman.

Washington Royal (Palmer Greening) : This variety is justly a favorite in many parts of its own State, — Massachusetts. In many localities it very properly supplants the better-known Rhode Island Greening. It is ready for use from the latter part of November till the middle of January, although with good storage it can be kept considerably longer. The tree is thrifty and vigorous, hardy and prolific.

Rhode Island Greening : This old favorite is losing ground not only in Massachusetts but in the home State as well. It is still extensively grown for market in certain especially favorable localities. It can be cultivated with success in the higher altitudes of Worcester, Berkshire and Franklin counties, but cannot usually be relied on elsewhere.

Sutton (Sutton Beauty) is another Massachusetts apple, enjoying a deserved popularity. The tree is fine, thrifty, vigorous and upright, and bears early. When it comes into bearing the tree spreads and forms a round top somewhat like King. The fruit is highly colored and of good quality.

Baldwin : This is the old stand-by in Massachusetts, and requires no comment. The man who does not know all about Baldwin had better emigrate to Texas.

Spitzenburg is regarded by many as being the highest in quality of all our American apples ; it is certainly one of the finest dessert fruits now grown. It is not adapted to Massachusetts, however, except on the higher lands in Worcester County and the western part of the State. Even in the localities generally adapted to it the tree is a poor grower, and much subject to disease. In order to overcome these difficulties, it is best to graft it in the tops of other trees.

Northern Spy is another great favorite, and one of many good qualities, which succeeds only on the higher lands in this State. It is always rather slow in coming into bearing, and frequently is a shy bearer throughout its life. Its high quality and the success with which it keeps late into the winter, however, make it almost a necessity in the home garden.

There are many other varieties, such as Westfield, Maiden Blush, Belleflower, Famense, Switzer, Swaar, etc., which might be mentioned in this list, and which would doubtless be chosen by many persons who have preferences for them. It is impossible, however, to name all the apples which might be used in a fruit garden in Massachusetts. The foregoing list completes those which seem to the writer to be most interesting.

No sweet apples have been named in the foregoing list. It is difficult to find a good sweet apple. Probably Tolman is the best, although Leicester Sweet and Orange Sweet are preferred by many. In the selection of sweet apples, one should be left entirely to his own preferences.

PEARS.

The selection of pears is even more difficult than the selection of apples. There were more varieties named in the books up to a few years ago than there were of apples, and doubtless more varieties cultivated in Massachusetts. At the present time, however, the nurserymen propagate comparatively few. The principal ones will be named below.

Bartlett is doubtless the pear most known. It is a fruit of good color, good flavor and good tree. It can be generally recommended.

Clapp (Clapp's Favorite) is another good old-fashioned pear, planted by nearly all growers in this part of the country. It is ready for eating about the middle of September, and is of good quality.

Sheldon is not so highly colored as some of the other pears, but it is of fairly good quality and large size, and comes later in the season, about December 1.

Duchess (Duchess d'Angouleme) seems not to be very generally grown. There is a notion that it does not succeed very well in this climate. It is said to thrive better when budded on quince roots. When properly grown, it is one of the finest in quality of all the pears, and should not be dismissed from the fruit garden without trial.

Lawrence is a fine autumn pear for home use. It is a medium-sized, smooth-skinned, golden-yellow fruit, rather soft and juicy, very sweet and mild.

Howell is an excellent medium-sized pear, and a favorite with many.

Bosc is a medium autumn variety, ready for the table about November 1. It is roundish pyriform in shape, and rather dull colored.

Seckel is a small pear, but one of the finest in quality ever grown in America. It ought to be in every family collection.

PEACHES.

Mountain Rose is the first of the early peaches which in my judgment is worth growing. There are several varieties which would come in a few days ahead of it, but they are small and poor. The fruit of the Mountain Rose is not large, but is excellent in quality. It is a white free-stone.

Early Crawford is probably the next variety of merit to ripen. It is a well-known yellow free-stone peach, and hardly need be described more particularly.

Elberta comes next in season of the leading varieties. It is comparatively new to Massachusetts, and many persons like the quality less than Early Crawford or Late Crawford. It is an early and prolific bearer, and well worth planting; yellow free-stone.

Late Crawford: This large, late, yellow free-stone variety is also well known in Massachusetts, and is a great favorite.

Crosby: This is a good yellow peach, of late season, commonly grown in this State.

Oldmixon is probably the standard white-fleshed peach in Massachusetts, although inferior, in the judgment of the writer, to the Belle of Georgia, which ripens at the same season.

Among these standard varieties already noted there are many promising and well-known sorts, many of which are worth while, but none of which can be safely recommended to the entire State. Among these varieties the writer is especially fond of the white-fleshed varieties of the Chinese Cling-stone type. Hiley, Waddel and Belle of Georgia are the best of these, and are all white-fleshed free-stones of high quality.

PLUMS.

The introduction of the Japanese plums during the last few years has revolutionized plum growing throughout the country. These new Japanese varieties, along with a few hybrids, have nearly, though not quite, supplanted the old-fashioned kinds. In the following list the old-fashioned plums and the Japanese will be given separately, the former first.

Green Gage: Under this name plums of several different varieties are grown. The two principally found are the true Green Gage and Bavay's, the latter often called Bavay's Green Gage, Reine Claude de Bavay, etc. The true Green Gage is smaller and earlier, while Bavay is larger and later. Both are of remarkably fine quality, — in fact, unsurpassed. They are especially good for canning. The skin and the flesh are green or greenish yellow, very firm, and the flesh clings to the stone.

McLaughlin is somewhat of the same character of Bavay, but softer fleshed, and inclined to have a pink cheek. The quality is very fine. The tree is not thrifty, and requires a good deal of petting in order to keep it in condition.

Bradshaw is a purple plum, large to medium sized, and good quality. It is a very desirable canning plum.

Fellenberg (Italian Prune, York State Prune) : This is a good late blue plum, which bears heavily after the tree reaches maturity, which requires several years. It is not of high quality, but yet cans well, and is recommended by its late season and by the fact that it is a free-stone.

Quackenbos is a medium late, roundish blue plum of firm yellow flesh and fair quality. It should be especially recommended to those persons who wish to have a blue canning plum.

Damson : Under this name several different varieties are grown, all of which are considerably alike, however. The fruit is small, hard, sour, and fit only for culinary purposes. It is a great favorite with many housewives, however, and should be included or omitted on the recommendation of the cook.

Japanese Plums.

Abundance is one of the favorites in this class, especially for home use. It comes early, ripening here late in July, usually being eaten by the birds. It is good quality, but the skin is soft and easily broken.

Red June comes about the same time, or a little earlier. It is prolific and a good tree, but the fruit is not of high quality.

Burbank is probably the best of all the Japanese plums for this section. The tree is a sprawling grower, and very prolific. The fruit is round, slightly pointed, yellow, covered with red, firm and of good quality. It is an excellent canning plum.

Chabot has not been much planted in Massachusetts, but is an excellent variety, much like Burbank in fruit, but with a better, more upright tree.

Satsuma is a large, red-skinned plum, with very dark blood-red flesh. It is, however, regarded by many housewives as excellent for canning. It will not succeed in certain locations, but seems to do well in most parts of this State.

Wickson is commonly classed as a Japanese plum, although in reality it is a hybrid, and only half Japanese parentage. It is a large, handsome, red-and-yellow plum; the tree is upright, and comparatively slow in coming into bearing. In some places it seems to bear heavily, in others sparsely.

CHERRIES.

Nearly all the amateurs in this country are still trying to grow sweet cherries, but, as a matter of experience, it may be said that they do not usually pay for the ground they stand on. Black Tartarian, Elton, Windsor and a few others give half success at times, but even so much encouragement as that is exceptional.

The only satisfactory varieties are the so-called sour Kentish or pie cherries. Of these there are three standard varieties. Early Richmond is the first in season, the fruit being light red. Montmorency comes next in ripening. It is a larger tree, and more satisfactory in bearing. Morello comes late, and is almost black and quite sour. The tree is dwarf, and very prolific. It is one of the most satisfactory garden trees in the list.

APRICOTS.

These fruits are grown to some extent in this country, but are not very popular. The tree is much like that of the peach, and the culture is the same. Some of the new Russian apricots are promising, but have not yet been sufficiently tested to make it safe recommending them. The varieties commonly planted are Early Moorpark and Alexander.

NECTARINE.

This fruit is also very much like the peach, and in most respects is not superior to it. It makes a pleasing variety in the garden, however, and one who likes to have a large selection of fruit should not omit the nectarine. The varieties commonly grown are Downton and Newington.

QUINCE.

This fruit is always useful in its season, and particularly adapted to the household economics of every well-regulated farm family. It should usually be planted in rich, heavy moist soil. The tree is awkward and wayward in its growth, so that it cannot be pruned into a shapely form. It is a fine bearing tree, however, and good crops can usually be secured with anything like reasonable attention. The best varieties of Massachusetts, according to our experience, are Orange, Champion and Rea's Mammoth.

GRAPES.

The grape can be cultivated successfully in all parts of the State, although probably it will succeed better in the warmer portions. It prefers a gravelly or even a stony soil, considerable elevation, and a sunny, warm slope. We prefer to run the trellises east and west, because in that way the vines get the benefit of the sunlight. There are a good many different methods of pruning, which are very interesting. If any one good system is followed, however, it is enough. These systems of pruning cannot be described in a short article like this, but can be acquired best by observation. If one has an opportunity to go into a vine-

yard properly managed, and see the thing done once by a man who understands it, it will seem a simple matter ever afterward. The best varieties for this section are those which ripen the fruit early. The late varieties do not ripen well in this latitude. The following list does not by any means include all the good grapes for home growing, but does include the most popular.

Concord is by all means the most widely planted, and in many ways is one of the most satisfactory of all grapes. Many people prefer the fruit of that to any other variety. It is thrifty, hardy and prolific. In general, however, we believe that it is better to substitute for it the variety named next.

Worden: This is a seedling of the Concord, and has all the characteristics of the parent variety. Most persons would be unable to tell the one from the other, except that the latter is from one to two weeks earlier. This advantage in earliness is a strong recommendation for Worden, and, as the variety is equally as good as Concord in other respects, it may well be substituted for it.

Green Mountain (Winchell) is a fine early variety, of comparatively recent introduction. The vine is not a very strong grower or a very heavy bearer. The bunches and berries are small, but the quality is very fine. The fruit is white. It ripens very early, — one of the first of the season, — and is especially to be recommended on that account.

Brighton is a favorite red grape, ripening in mid-season or a little earlier. The bunches are a bit loose, but the fruit is large and of good quality. It is an excellent amateur grape.

Delaware is one of the most popular of all red grapes, although it is a little difficult to grow. The fruit is small, but very fine.

Wilder and Herbert are two excellent black grapes, of large size and superior quality, originated by the late E. S. Rogers of Salem, Mass. Their good qualities are especially responsive to the careful attention of an enthusiastic amateur. They should be included in every private collection where grapes are much prized and carefully managed.

BLACKBERRIES.

Blackberries and other small fruits should always be cultivated in the home garden. Blackberries should be planted in rows six to eight feet apart, and four feet apart in the row. The rows will naturally fill in more or less by the growth of suckers, and after mid-season the rows would soon fill up, unless cultivation is practised. It is a good plan to follow a rotation of about six years with blackberries on ordinary soil. The same rule applies to raspberries. After this length of time plantations are inclined

to run out, and the crops are not so good. It is best then to set a new plantation on fresh soil, and as soon as that comes into bearing pull up the old one. The blackberries which seem to do best in this State are Agawam, Snyder, Eldorado and Ancient Briton.

RASPBERRIES.

This fruit ought to be planted and managed in much the same way as blackberries. It requires systematic pruning, which means chiefly the cleaning out of old wood and shortening back the new wood to the height of four or five feet. The varieties mostly grown in this section are the following:—

Cuthbert: This variety is grown much more than any other, and is probably, all things considered, the most desirable. The fruit is red.

Gregg is a late black variety which succeeds admirably in some situations, and which when it does succeed is one of the best of its class.

Kansas is another good black-cap variety, ripening in mid-season. It is preferred by some growers.

Shaffer and Columbian are two varieties differing considerably from those previously mentioned, and new in cultivation. The color of the fruit is purplish, and not attractive. The quality, however, is excellent, and the fruit is very valuable for home use.

London: A medium-sized, hardy and fine quality; red, not quite so productive as Cuthbert.

CURRENTS.

These fruits are especially desirable for jelly making and similar culinary operations. The chief problem in growing is to combat the currant worm. For this purpose thorough spraying with Paris green is best. The best varieties are Fay, Red Cross and Victoria. White currants and black currants are sometimes grown, but are not in great demand.

GOOSEBERRIES.

In a few families the gooseberry is indispensable. It is usually not difficult to grow. The standard varieties are Houghton and Smith, although some of the newer introductions promise to be valuable.

STRAWBERRIES.

The strawberry bed should be renewed each year. The best practice is to set a new bed every spring, as soon as it can be done conveniently. This bed is enriched and highly cultivated during the year, in order to get the strongest possible growth from the plants. In some systems of cultivation the runners are

kept removed, while in others they are allowed to grow in the middle of the row. Such a bed, properly managed, should be in condition to bear a large crop of fine berries the second spring. It may then be left during the third year to bear a second crop, if one insists on it; but the second crop is much inferior to the first, and those who cultivate strawberries extensively have found by experience that it does not pay to carry most plantations over longer than the second year.

There are many excellent varieties, almost any of which will answer for home use, and many of which are desirable. Glen-Mary, Clyde, Brandywine, Sample, Haverland, Marshall and Gandy are among the best, and should be relied on when the planter does not know from personal local experience in his own garden, that other varieties are better.

In general, the management of the home garden should aim at a high culture, thorough cleanliness and the best enrichment of the soil. It has come to be almost a part of our language that a garden should be a spot exemplifying all the agricultural virtues herein specified. In actual fact, however, we know that very often the garden is the most neglected spot on the farm. Good results in growing of fruits cannot be expected from meagre feeding and slovenly cultivation. The trees and bushes should be always arranged in such a manner that good cultivation can be given with a horse and with horse tools. The mistake is often made of jumbling up a garden in such a way that hand cultivation is required, and this has a tendency to bring about the neglect of the garden concerning which we complain.

A word should also be said in regard to drainage. The garden should have good sub-drainage. Of course this is true of any other agricultural land, but it is more especially required for trees and vines, because they send their roots to an unusually great depth. If the sub-soil is cold and wet, therefore, a good growth of trees cannot be expected. In the matter of fertilizing the soil no general rule can be given. Barnyard manure is the best general amendment to most soils, but where humus can be supplied in sufficient quantity by other means, the liberal use of commercial fertilizers should be encouraged. A mixture containing equal parts of ground bone, muriate of potash and nitrate of soda may safely be applied at the rate of fifteen hundred to two thousand pounds to the acre annually. In case nitrogen is supplied by the growth of leguminous crops or the application of barnyard fertilizer, the amount of sodium nitrate may be materially cut down.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF JUNE, 1903.

ISSUED BY

J. W. STOCKWELL,
SECRETARY STATE BOARD OF AGRICULTURE.



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CROP REPORT FOR THE MONTH OF JUNE, 1903.

OFFICE OF STATE BOARD OF AGRICULTURE,
BOSTON, MASS., July 1, 1903.

Bulletin No. 2, Crop Report for the month of June, is presented herewith. We desire to call the attention of our readers to the article on "Summer management of the dairy herd," at the close of the Bulletin, by Prof. F. S. Cooley, professor of animal husbandry and dairying at the Massachusetts Agricultural College. The drought of the early portion of the present season has made the question of profitable management of the dairy herd one of prime importance to all farmers dependent upon dairying for any considerable proportion of their profits, and the subject is therefore of particular interest at this time.

PROGRESS OF THE SEASON.

Preliminary returns to the Statistician of the United States Department of Agriculture (Crop Reporter for June, 1903) on the acreage of spring wheat sown indicate an area of about 17,257,000 acres, a decrease of 364,000 acres, or 2.1 per cent, from the revised estimate of the acreage sown last year. The average condition of spring wheat on June 1 was 95.9, as compared with 95.4 last year, 92 in 1901, and a ten-year average of 92.9. The average condition of winter wheat was 82.2, as compared with 92.6 on May 1, 76.1 on June 1 of last year, 87.8 in 1901, and a ten-year average of 79.1.

The total reported acreage in oats is about 27,732,000 acres, a reduction of 920,000 acres, or 3.2 per cent, from the area sown last year. The average condition of oats on June 1 was 85.5, against 90.6 last year, 85.3 in 1901, and a ten-year average of 90.2.

The acreage reported as under barley exceeds that harvested last year by about 330,000 acres, or 7.1 per cent.

The average condition of barley was 91.5, against 93.6 last year, 91 in 1901, and a ten-year average of 88.5.

The acreage under rye shows a reduction of 3.6 per cent from that harvested last year. The average condition of rye was 90.6, against 88.1 last year, 91 in 1901, and 89, the mean of the corresponding averages for the last ten years.

The acreage of clover for the country as a whole cannot be satisfactorily determined, but all the principal clover States except Wisconsin report decreases in acreage. The condition of clover exceeds the ten-year average in Iowa, Illinois, Missouri, Kansas and Wisconsin, while New York, Pennsylvania and Ohio show conditions below their ten-year averages.

Of the 14 States having 5,000,000 apple trees and upwards, but 2, Virginia and Tennessee, report conditions above their ten-year averages, the conditions in other important apple-producing States ranging from 2 points below that average in North Carolina to 23 points below in West Virginia.

The prospects for the peach crop were decidedly unfavorable, Oklahoma alone among the important peach-growing States showing a condition above the ten-year average. In the remaining States having 3,000,000 peach trees or upwards, conditions range from 1 per cent below the ten-year average in California to 43 per cent below in Arkansas.

The acreage devoted to rice has been reduced in all the principal rice-producing States, the principal decrease being 14 per cent, in Mississippi. The condition of rice is below the nine-year average in all rice-producing States except Alabama, Louisiana and Texas, where conditions are 1, 1, and 4 per cent above their nine-year averages respectively.

There was an improvement in the condition of spring pastures during May in Iowa, Missouri, Michigan, Kansas and Wisconsin. New York, Pennsylvania and Ohio showed conditions considerably lower than the month before, while the condition in Illinois declined a single point.

The total area planted in cotton is estimated at 28,907,000 acres, an increase of 1,029,000 acres, or 3.7 per cent, upon the acreage planted last year. The average condition

of the growing crop on May 26 was 74.1, as compared with 95.1 on May 26, 1902, 81.5 on May 20, 1901, and a ten-year average of 86.9. The condition reported for the cotton belt as a whole and for the States of Georgia, Alabama and Texas in particular, was the lowest ever reported at that season of the year. The crop was almost everywhere from ten to twenty-one days late.

In Massachusetts the acreage of oats compared with that harvested last year, was given as 105, and the average condition June 1 as 73; the acreage of rye as 98, and the condition as 85; the acreage of clover as 96, and the condition as 78; the average condition of spring pasture as 70; the average condition of apples as 63; and the average condition of peaches as 30.

TEMPERATURE AND RAINFALL FOR THE WHOLE COUNTRY.

[FROM UNITED STATES CLIMATE AND CROP BULLETINS.]

Week ending June 1.—The week was slightly cooler than usual along the immediate California and Washington coasts, in the southern Rocky Mountain region, west Gulf States, central Missouri and upper Mississippi valleys, northern portion of the upper Lake region, and over portions of New England and the Middle Atlantic States. The week averaged warmer than usual in the South Atlantic and east Gulf States, Ohio valley, and over portions of the lower Lake region, also over the northern Rocky Mountain region and the north Pacific coast. Freezing temperatures occurred in the central Rocky Mountain region and in northern New England. The week was marked by exceptionally heavy rains in the States of the lower Missouri, central and upper Mississippi and lower Ohio valleys, and in the northern portions of the Gulf States, while there was more than the average over a large part of the Middle Atlantic States and Lake region. There was less than the average rainfall in New England, northern portions of the Middle Atlantic States, and generally along the south Atlantic and Gulf coasts and the Pacific coast.

Week ending June 8.—The week was warmer than the average throughout the Pacific coast and Plateau regions

and over the northern portions of the Missouri and upper Mississippi valleys. In southern New England, the Middle Atlantic States and the Ohio, central Mississippi and lower Missouri valleys, south-eastern Rocky Mountain slope and throughout the Gulf States, the week averaged cooler than usual. Minimum temperatures below 40° occurred in northern New England. The Ohio valley, the greater part of the Middle, South Atlantic and east Gulf States, portions of the central Mississippi valley and limited areas of central Texas received more than the average rainfall. In northern New England, over a large part of the upper Lake region and in portions of Oklahoma, Indian Territory and north-eastern Texas there was no appreciable amount of rain, while less than the average amount fell in the central Gulf States, over the greater part of Florida and in the upper Missouri and northern portion of the upper Mississippi valleys.

Week ending June 15. — The week was unseasonably cool in all districts east of the Rocky Mountains, except southern Florida and the immediate coast districts northward of Virginia, where the departures were slight. Throughout the central valleys, Southern States and over the western portion of the Lake region the minimum temperatures from the 10th to the 15th were the lowest yet recorded in the second decade of June at a majority of the stations. Heavy rains fell throughout New England, the greater portion of the Middle Atlantic States, in the upper Ohio valley, portions of the lower Lake region, over local areas in the South Atlantic and central Gulf States, and also over a large part of Texas, New Mexico and Colorado. Except over a few areas of very limited extent throughout the central valleys and upper Lake region the rainfall was less than usual, and over a large part of these districts there was no appreciable amount. A considerable portion of the South Atlantic and east Gulf States also received less than the weekly average.

Week ending June 22. — The week was cooler than usual in all districts east of the Rocky Mountains, over the southern Plateau region and in California. It was decidedly cool in the Lake region, over the northern portion of the Middle Atlantic States and in New England, where the

daily average deficiency ranged from 6° to 14°, being most marked in southern New England. In the northern Rocky Mountain and north Pacific coast regions the week was warmer than usual. There was more than the average amount of rain in New England, the northern portion of the Middle Atlantic States, eastern Florida, in the Missouri valley, northern Texas, and over limited areas in the South Atlantic and Gulf States and Lake region. In the upper Mississippi and Ohio valleys, the southern portion of the Middle Atlantic States and over the greater part of the Lake region and Gulf States the rainfall was below the average.

SPECIAL TELEGRAPHIC REPORTS.

[WEATHER BUREAU, BOSTON.]

Week ending June 1. — New England. Boston : Droughty conditions continue, but somewhat alleviated in south by moderate showers; damage to gardens, fruits and berries by frost serious and widespread; probably half the cranberry crop destroyed; much replanting necessary; pastures failing; hay crop will be light.

Week ending June 8. — New England. Boston : Droughty conditions continue; showers of Sunday afforded some relief in south; grass light; good second crop of hops; grain poor; apples holding fairly well, and outlook good; blackberries and raspberries in full bloom; strawberries small crop; much tobacco setting, condition fair.

Week ending June 15. — New England. Boston : Drought broken; rains very beneficial over whole district; winter grain lodged; apples uneven, blown off by high winds; spring grain, pastures and all garden crops much improved; small fruits, except strawberries, promising; much late-set tobacco greatly aided by rain; potatoes uneven, but generally looking fairly well.

Week ending June 22. — New England. Boston : Cloudy, rainy weather; grass, grain and pastures benefited; potatoes uneven, but improving; apples uneven, growing well; corn poor, much replanted, some fields ploughed up for forage crops; strawberries rotting; other small fruits improving; tobacco making slow growth, but improving; all crops need sunshine.

WEATHER OF JUNE, 1903.

June opened auspiciously, the first three days of the month being clear, with summer-like temperatures and light southerly to westerly winds. During the nine days following the skies were overcast, with the daily temperatures ranging from 4° to 6° below the seasonal average. On the 8th the first rain of the month fell, which was the beginning of the breaking of the long drought, which had its beginning soon after the middle of April. The 13th was a clear day, but from that time until the 25th inclusive the weather was characterized by abnormally low temperature, continuous cloudiness, and almost daily rains. The rains were moderate and of the usual character, except those of the 15th and 21st, which were downpours of unusual amounts. In some sections the rain came in the form of cloud-bursts. The rainfall of the month was unusually large, the amounts ranging from two to three times the normal of June. With slight exceptions, during the opening and closing days of the month, the temperature was continuously below average. The highest of record at Boston was 85° on the 3d and it rose to or exceeded 80° on only one other day, 81° on the 27th. There was a preponderance of easterly winds along the coast, and this was often attended with much foggy weather. The month closed with several pleasant days, there being considerable sunshine from the 27th to the 30th, although the temperatures remained low. Viewed as a whole June was one of the most unpleasant months of its name, and the national weather records show but few parallels.

In the circular to correspondents returnable June 24 the following questions were asked:—

1. What insects are proving injurious in your locality?
2. How is Indian corn looking, and what is the acreage as compared with previous years?
3. How is haying progressing, and what is the prospect for the crop?
4. Will the acreage of forage crops be increased in your locality?

5. How does the acreage of early potatoes compare with previous years, and what is the promise for the crop?

6. How do early market-garden crops compare in yield and price with former years, and what is the prospect for those not yet harvested?

7. How do the quantity and price of dairy products and the supply and price of dairy cows compare with former years?

8. What is the condition of pasturage in your locality?

9. What is the outlook for such fruits and berries as are grown for market, naming them?

Returns were received from 170 correspondents and from them the following summary has been made:—

INSECTS.

But little damage is reported from insects, the cold and wet weather having doubtless kept down their numbers and held many species in check to a considerable extent. Potato bugs are the insect most commonly reported, but they do not appear to be present in the usual numbers or to threaten serious damage. Onion maggots appear to be somewhat more prevalent than usual and tent caterpillars less so. Other insects mentioned are squash bugs, elm beetles, cut worms, rose bugs, white grubs, canker worms, currant worms, borers, wire worms, plant lice, cabbage maggots, spittle insects and gypsy and brown tail moths.

INDIAN CORN.

Indian corn has seldom been in as unsatisfactory condition at this time of year. It is reported as small and backward, and turning yellow in many instances. The severe drought of May prevented good germination of the seed and it came up poorly, many fields having to be replanted, consequently showing a poor and uneven stand. Since the drought has been broken the excessive rains and cool atmosphere have kept it at a standstill. Much warm weather is needed to bring the crop forward satisfactorily, but with a favorable season a reasonably good crop may be secured. The acreage shows a slight general increase for the State at

large. Ensilage corn has not yet been planted in many instances, because of unfavorable weather for preparing the soil.

THE HAY CROP.

Haying had not begun at the time of making the returns, the dull, rainy weather preventing. The heavy rains have started grass to growing well and a great improvement in the crop is indicated. No reliable prediction can be made as to the probable amount of the crop at this time, but perhaps a two-thirds crop will be secured. The recent lack of sunshine will tend to injure the quality of the crop. Haying will be much delayed this year, as many meadows will be too wet to cut at once and the tendency will also be to allow the crop to thicken up as much as possible before cutting. The rains have greatly benefited grass roots and with timely rains in future a good second crop may be expected.

ACREAGE OF FORAGE CROPS.

The returns indicate that the acreage of forage crops will be considerably increased in an effort to supply the deficiency in the hay crop, but few have been put in as yet because the rains have made it impossible to prepare the land for them.

EARLY POTATOES.

The acreage of early potatoes is about a normal one, local increases in acreage being balanced by local deficiencies in a great measure. There is much complaint of poor seed, which with the drought prevented the crop coming up well. The vines are not far enough advanced at present to give a reliable indication as to the final outcome, being quite backward for the time of the year, but the prospects are not of the best as the crop is uneven, with many missing hills.

EARLY MARKET-GARDEN CROPS.

Early market-garden crops generally made poor yields except on truck farms where irrigation is possible, but this was in a considerable measure balanced by increased prices. Later crops have improved with the rains and with seasonable weather should yield well.

DAIRY PRODUCTS.

There is a slight shrinkage in the quantity of dairy products for the State as a whole, but the flow of milk has been remarkably well maintained, by increased barn feeding in many instances, particularly in the dairy sections of the State. There is a continued upward tendency in the price of dairy products, particularly of milk. The quarantine against the foot and mouth disease has limited the supply of dairy cows from without the State and they are consequently bringing much higher prices than usual.

PASTURAGE.

Pastures are much improved since the rains and while the feed is undoubtedly still short in many instances they should be in normal condition with a few days of warm, growing weather.

FRUITS AND BERRIES.

The strawberry crop has been nearly a failure in most sections, being first damaged by frost, then much injured by drought, while the rains came at a time to rot a large proportion of the crop on the vines. Prices have generally ranged high for such berries as could be secured. Raspberries, blackberries and currants promise well. Pears, cherries and plums promise only light crops in the aggregate, and there will be practically no peaches. Later reports are needed before speaking with authority on the apple crop, but the unusually good bloom for a non-bearing year appears to have set well and there are few complaints of their dropping as yet. Wild berries promise well.

NOTES OF CORRESPONDENTS.

(Returned to us June 24.)

BERKSHIRE COUNTY.

Sheffield (DWIGHT ANDREWS). — No insects are doing damage at present. Indian corn is very backward, and the acreage less than usual. No haying has been done as yet, and there will not be much of a crop. The acreage of forage crops will be increased. Early potatoes are looking well. Early market-garden crops are about average in yield and price. The quantity and price of dairy products are about as usual. Pastures have been very dry, but are looking better since the recent rains. Strawberries are abundant, and other berries promise well.

Monterey (WM. S. BIDWELL). — Tent caterpillars are doing some damage. Haying has not begun on account of rainy weather; prospect for about a two-thirds crop. The acreage of forage crops will be increased this year. Early potatoes are about normal in acreage and in promise for the crop. Quantity of dairy products less than usual, price higher; no cows for sale. Pasturage is in good condition. Fruits and berries are not grown for market. Corn is looking poorly, but with an increased acreage.

Otis (S. H. NORTON). — There is no complaint of damage from insects. Indian corn is very backward, because of drought and the present excess of moisture. Haying has not begun, and the prospect is that the crop will be short. There will be more forage crops grown than usual. There is about the usual acreage of early potatoes, but they are backward. The quantity of dairy products is about average, and the prices fully up to the average. Pastures are looking much better since the rains. Apples and pears will be fair crops, and wild berries will be plentiful.

Washington (E. H. EAMES). — No insects are doing damage at present. Corn is backward, with about the usual acreage. The acreage of forage crops will be about the same as last year. There is the usual acreage of early potatoes, and they are looking well. Dairy products are about the same as in former years as regards quantity and price, as are also dairy cows. Fruits and berries are not grown for market in this locality.

Richmond (T. B. SALMON). — Cucumber and squash bugs are doing some damage. Indian corn is very yellow and backward. Haying has not begun, and there is prospect of an average crop. The acreage of forage crops will be increased in this locality. There is the usual acreage of early potatoes, but the ground is too wet to hoe them, and they look poorly. Dairy products bring average prices, and dairy cows are plenty. Pasturage is in good condition. Strawberries are an average crop; too early to estimate as regards raspberries, blackberries and currants; apples average.

Windsor (H. A. FORD). — No insects are doing damage at present. Indian corn is backward, with about the usual acreage. Haying has not commenced, and the crop is improving very fast. There will be an increased acreage of forage crops. Early potatoes came up slowly, but will advance rapidly when the weather clears. The price of dairy products is fully up to the usual average; dairy cows about as usual in supply and price. Pasturage is in fine condition since the rains. Strawberries are doing quite well.

Savoy (W. W. BURNETT). — There is little trouble from insects this year. Corn is looking badly, as it is backward and has a poor stand; acreage about as usual. Haying has not commenced, and the prospect is for less than an average crop. There will be very little if any increase in the acreage of forage crops. The acreage of early potatoes is somewhat increased, with the crop looking finely. Not much market gardening is done, but gardens are generally looking badly. Dairy products are a full average in quantity and price, and there is a fair supply of dairy cows at good prices. Pastures are doing finely since the rains. Berries have suffered from the severe drought, but fruits and berries are not much grown for market.

Williamstown (S. A. HICKOX). — No insects are doing damage at present. Indian corn is in bad shape, but the acreage is increased 25 per cent over former years. Haying has not begun, and the crop will be a poor one. The acreage of forage crops will be increased this season. There is the usual acreage of early potatoes, and the promise for the crop is poor as yet. The prospect for market-garden crops not yet harvested is good. Dairy products are less than usual in quantity, and bring better prices. The outlook for fruits and berries grown for market is normal at this time.

FRANKLIN COUNTY.

Rowe (J. E. CLEMONS). — A few tent caterpillars have appeared. There is no marked change in the acreage of corn, but it is much in need of sunshine at present. There will not be any hay of any account cut before July 10. The acreage of forage crops is about the same as last year. About the usual amount of early potatoes have been planted. Dairy products are above the average in quantity and price, and there is good sale for good cows at fair prices. Pastures are looking well, but need sunshine. Strawberries, blackberries and raspberries are grown for market to a small extent, and the outlook is not very favorable.

Hawley (C. C. FULLER). — Tent caterpillars are doing some damage, and snails are working on strawberries. Indian corn is backward, and did not come up well. The hay crop is looking well, but no haying has been done, because of rain. The acreage of early potatoes is much the same as usual, and some fields look well. The acreage of forage crops will be increased if the ground does not continue too wet for planting. Quantity of dairy products better than usual, and price higher; cows sold well early in the season. Pasturage is in good condition. Strawberries are scarce.

Leyden (U. T. DARLING). — The season is too cold and wet for insects. Corn is very backward and came up very unevenly, nearly all being planted the second time; acreage about as usual. No haying has been done as yet, but there is the prospect now of a fair crop. The acreage of forage crops will be increased this year. There is the usual acreage of early potatoes, with the promise for the crop fair. Dairy products sell well, and cows are cheaper than usual. Pasturage is looking well. The outlook for such fruits and berries as are grown for market is good.

Gill (F. F. STOUGHTON). — Very little damage has been done by insects. Indian corn is very small and late; acreage fully as much as usual. Haying has not commenced, and grass is growing fast. The acreage of forage crops will not be increased. Potatoes are backward. Cows are not quite as high as in former years. Pasturage is in very good condition since the rains.

Sunderland (J. M. J. LEGATE). — The cut worms have worked in tobacco somewhat. Corn is looking very well, especially the early planted; acreage about an average with past years. No haying has been done yet, on account of wet weather; prospect for the crop below the average. There will be no increase in the acreage of forage crops. Pasturage suffered severely from the drought, and has not recovered yet. The outlook for fruits and berries is

very poor; strawberries were pinched by drought, and what are left are rotting on the vines.

Wendell (N. D. PLUMB). — Indian corn is very backward, owing to cold weather; acreage larger than usual. Haying is very backward, but the crop will be an average one. The acreage of forage crops will be about a normal one. There is the usual acreage of early potatoes, but the crop is very uneven, and many are replanting. Market-garden crops are very backward. Dairy products are somewhat higher than usual, and dairy cows cheaper than for many years. The late rains have improved the pastures. Raspberries and blueberries promise a large yield.

Orange (A. C. WHITE). — Potato bugs are doing some damage. Indian corn is small and yellow, with a slight increase of acreage. Haying has not commenced; the crop has looked very badly, but is improving. The acreage of forage crops will be increased. Quantity and price of dairy products normal; plenty of cows for sale at low prices. Pastures have been badly parched, but the abundant rains are improving them.

New Salem (DANIEL BALLARD). — Potato bugs and currant worms have been quite numerous. Indian corn is backward, with a poor stand, owing to extremes of drought and moisture. The acreage of forage crops will be somewhat increased. There is an average acreage of early potatoes, with the promise of an uneven crop, some fields having failed to come up well. The demand for dairy cows weakened during the extreme dry weather; quantity and price of dairy products a fair average. There is prospect of a moderate crop of apples; small fruits, especially strawberries, a light crop.

HAMPSHIRE COUNTY.

Pelham (J. L. BREWER). — There are no insects doing special damage. Indian corn is uneven and backward. Haying has not commenced to any extent; about half a crop is expected. The acreage of forage crops will be increased. There is a fair acreage of early potatoes, with a good promise for a crop. There is a good demand for butter at a fair price, and cows bring good prices. Pastures are very much improved over two weeks ago. There will be some blueberries and huckleberries.

Belchertown (H. C. WEST). — Insects are doing very little harm as yet. Present prospects for the corn crop are bad, half a crop; acreage full average. No haying has been done as yet, and the present outlook is for three-fourths of a crop. Double the usual amount of forage crops will be put in. The acreage of early potatoes is much larger than usual, and they are looking finely.

Quantity and price of dairy products and supply and price of dairy cows are all fully up to the average. Pastures are below average condition. Apples promise a fair crop; very few pears, peaches and grapes; berries also a short crop.

Hadley (H. C. RUSSELL). — Plant lice and cut worms are doing some damage. Corn is in very poor condition. No haying has been done as yet. There is the usual acreage of early potatoes, but they came up poorly. Garden seeds did not come up well, and market-garden crops are late because of replanting. The quantity and price of dairy products and the supply and price of dairy cows are all about as usual. Pasturage is in good condition in some localities, but has suffered from the drought.

Granby (GEO. A. BLISH). — There has been very little complaint of any insects except the cabbage maggot. Corn is very backward, and shows a poor stand, with about the usual amount planted. Haying has not begun as yet, with the prospect of a small crop. The acreage of forage crops will be increased a little this year. There were about the usual amount of early potatoes planted, but they came up very poorly. The farmers are trying to get one-fourth cent more per quart for their milk, otherwise no change in quantity and price of dairy products. Fruits and berries are not raised for market to any extent.

Northampton (H. C. COMINS). — The potato beetle is unusually plentiful. Corn is very backward, with a poor stand. Haying is hardly begun, and the crop is still improving. There is an increased acreage of early potatoes, and the crop is promising well. The acreage of forage crops will be increased to a considerable extent. Market-garden crops are yielding poorly, but bring good prices. Quantity and price of dairy products and supply and price of dairy cows are approximately the same as last year. Pasturage is not in good condition, because of drought. The outlook for most small fruits is only fair; strawberries have suffered much from rains.

Westhampton (H. A. PARSONS). — Potato bugs are doing some damage. Indian corn is backward, with about the usual acreage. The prospect for the hay crop is much better than two weeks ago, and it probably will not fall off more than one-eighth from the average. The acreage of forage crops will be increased. There is the usual acreage of early potatoes. Market-garden crops are generally late. Dairy products are up to the average in quantity and price. Pastures are in good condition. Blackberries promise a good crop.

Goshen (ALVAN BARRUS). — No insects are doing serious damage. Corn is uneven, as it came up badly and crows have been

very destructive; acreage average. Continuous rains prevent all haying, but may avert what would have otherwise been a hay famine. Some early potatoes look well, but as a whole the crop is very uneven, and looks badly. The acreage of forage crops will be increased this year. Pasturage is in fairly good condition. Blackberries and blueberries promise well; apples dropping badly; other fruits uncertain.

Worthington (C. K. BREWSTER). — The acreage of Indian corn is about the same as usual, but it is looking poorly. The hay crop is decidedly improved since the rainy season came on, but will hardly reach the average. The acreage of forage crops will be increased. There is about the usual acreage of early potatoes, but the outlook is not very promising. Dairy products are stronger in price; price of dairy cows about as usual. Pastures are improving every day with the abundant rains. Cultivated crops are looking poorly and the general outlook is not very promising.

HAMPDEN COUNTY.

Blandford (E. W. BOISE). — Very few insects have appeared. Indian corn is small and backward; acreage larger than usual. Haying has not begun, prospect for a fair but not an average crop. The acreage of forage crops will be increased, but much land that has been ploughed for that purpose cannot now be worked because of excessive moisture. Early market-garden crops are late, and yields not average; prices well up. Dairy products are a full average in supply; prices of cows not up to last year, but about average. Strawberries are a failure, because of drought and too much moisture later; wild berries coming forward in profusion.

Southwick (L. A. FOWLER). — Cut worms, potato bugs and tent caterpillars are doing some damage. Indian corn is looking fairly well, having improved greatly since the rains; acreage about as usual. Haying has not begun, and the crop has been greatly improved by the long-continued rains. The acreage of forage crops will probably be increased. There is the usual acreage of early potatoes, and they are looking well. Early market-garden crops are below average in yield, but prices are good. Pastures have improved since the rains.

West Springfield (T. A. ROGERS). — Onion maggots and potato bugs are doing some damage. Corn is very backward, as it came up slowly, and the weather is now too wet and backward for growth. No haying has been done, but there is prospect of an average crop. The acreage of forage crops will be increased. The acreage of early potatoes is up to the average, but most fields

show uneven growth. Early market-garden crops did not start well, because of drought; and do not grow well, because of cloudy and wet weather. Milk is short, on account of drought; cows high. Pasturage is looking fairly well. Strawberries are a short crop; raspberries and blackberries promise good crops.

Agawam (J. G. BURT). — Potato bugs are doing some damage. The acreage of corn is about the same as usual, and the crop is very backward. Grass is doing well now, but the hay crop will be light. The acreage of forage crops will be light. Acreage of early potatoes about average, and promise for the crop poor. Early market-garden crops were about average in yield and price, and the prospect is good for those not harvested. Dairy products are a little above last year in quantity; dairy cows about the same in supply and price. Pasturage is in good condition.

Chicopee (R. W. BEMIS). — Very few insects as yet; not many potato bugs. Indian corn was slow in coming up; silo corn just put in. Haying has not commenced to any amount. Potatoes are doing quite well. Market-garden crops are about normal this year in yield and price. Pastures were short until the rains came. Strawberries have been plenty.

Ludlow (CHAS. B. BENNETT). — There are very few insects of any kind. Not more than half the corn seed came up, and the crop is very poor; acreage much larger than usual. No hay has been cut, and the crop will be light. The acreage of forage crops will be increased, as farmers are plowing up mowings and sowing millet and corn. The acreage of early potatoes is smaller than usual, but the crop looks finely. Milk is plenty, with prices about as usual. Pastures are in very good condition. There will be no fruit of any kind; strawberries were a very light crop.

Palmer (O. P. ALLEN). — Potato bugs are doing some damage. Corn is very backward, on account of the weather; acreage about as usual. Few farmers have commenced haying, and the crop will be light. There is the usual acreage of early potatoes, but the present outlook is not promising. The acreage of forage crops will be increased on account of the short hay crop. The yield of early market-garden crops has been below the average, but prices have been high; prospect for later ones not encouraging. Dairy products about as usual in quantity and price, as are dairy cows in supply and price. Recent rains have improved pastures very much. The outlook for fruits and berries is not as good as usual; no peaches; few cherries; apples and pears less than usual; small fruits light.

Wales (G. A. ROGERS). — Tent caterpillars are doing some damage. Corn came up very poorly, and many fields had to be

replanted; and all is now very backward. No hay has been cut as yet, and the crop will be light on account of the early drought. There will be a small increase in the acreage of forage crops. Potatoes are looking finely. Garden seeds came up very poorly, and had to be resown. Dairy products are about as for two or three years past in quantity and price. Pastures were dried up until the rains came, but are now reviving. We have had ten inches of rain in the past ten days. Strawberries were a good crop, and raspberries are looking well.

WORCESTER COUNTY.

Warren (W. E. PATRICK). — There is no particular damage from insects. Indian corn is very yellow, and is not growing at all. No haying has been done, and the crop will be late and small. There will be an increase in the acreage of forage crops. There is about the usual acreage of early potatoes, and the crop promises well. Quantity of dairy products one-third less than usual, and price a little higher; supply of cows more than meets the demand, but prices are about the same as usual for good ones. Pasturage is improving rapidly, but is not nearly up to the average.

Spencer (H. H. KINGSBURY). — Potato bugs are the only insects doing damage. Less corn than usual was planted, and it is not growing well, as the weather is too cold and the ground too wet. No grass has been cut, but the prospect is good for an average hay crop. There will be an increased acreage of forage crops as the May drought called attention to the scant supply of fodder. There is no change in the acreage of potatoes, and the crop is in fine condition. Dairy products are scarce and high, as is also dairy stock. Pasturage is in excellent condition. Wild blueberries and raspberries promise an abundant crop.

New Braintree (C. D. SAGE). — Potato bugs and spittle insects are doing some damage. The acreage of Indian corn is about the same as usual, but it is looking poorly, much having to be replanted. No haying has been done, and there is the prospect of a three-fourths crop. There will be an increased acreage of forage crops, if there is an opportunity to put in late crops. There is about the usual acreage of early potatoes, and they are looking fairly well. Quantity of dairy products fully up to the average, prices a little above; cows the same. Pastures are in good condition since the rains. There is very little fruit grown except apples, and they promise half a crop.

Oakham (JESSE ALLEN). — Tent caterpillars are doing some damage. Indian corn is very backward. Haying has not begun,

and the prospect is good for a fair crop. The acreage of forage crops will be increased. There is the usual acreage of early potatoes, and they look well. Cows are doing well, and dairy products bring a fair price; new milch cows scarce and high. Pastures are in excellent condition now. Apples and pears are setting well, also plums; no peaches; blackberries promise an abundant crop.

Templeton (LUCIEN GOVE). — Potato bugs are doing some damage. Indian corn is small and backward, most of it planted very late; early planted did not come up well; acreage rather less than average. No haying done, with about a three-fourths crop in prospect. Early potatoes came up quite unevenly, and are backward; acreage average. Yield of early market-garden crops unusually light, not much difference in price; promise for later ones fair. Dairy products are in usual supply and price; no great demand for dairy cows, and price tending downward. Pasturage is much improved, and in nearly normal condition. High winds did much damage to fruit; berries light crops.

Ashburnham (E. D. GIBSON). — No insects are doing damage. Corn is yellow and backward; usual acreage. No haying has been done, but with favorable weather a fair crop will be secured. The acreage of forage crops is not increased. There is the usual acreage of early potatoes, but they are very backward. Quantity of dairy products about the same as last year; price possibly a little better. There is now plenty of feed in pastures. Blueberries promise well.

Princeton (A. O. TYLER). — Potato bugs are doing some damage. Indian corn is backward. The prospect for the hay crop is brighter since the rains, but there will be only about a two-thirds crop. The acreage of forage crops will not be much increased. The acreage of early potatoes is about normal. Dairy products bring higher prices than usual, but the price of dairy cows is about as usual. Pastures are in fairly good condition. Fruits and berries are not grown for market.

Bolton (H. F. HAYNES). — No insects of any account are doing damage. Corn is very small and backward. Haying has not yet begun. The acreage of forage crops would be increased if it were not too wet to sow them. There is about an average acreage of early potatoes, but they look very poorly. Prices for market-garden crops good, but they are little grown. Dairy products are fully up to past years in quantity and price. Pasturage is in good condition since the rains came. There are very few strawberries; blackberries are looking well.

Holden (G. S. GRAHAM). — Potato bugs were plenty, but have disappeared with the rains. Corn is looking yellow, and the

poorest ever known at this time of the year; about the usual acreage planted, and more planned for. No haying has been done; crop changed wonderfully, but still very light. There is about the usual acreage of early potatoes, and many fields look finely. Prices for dairy products hold up well; so do prices for cows; supply about as usual. Pasturage has been wonderfully improved by the rains. Strawberries are not very plenty.

Worcester (H. R. KINNEY). — Potato bugs are doing some damage. Indian corn is very yellow. Haying has not begun, but grass has begun to grow some. The acreage of forage crops will be increased if the land gets dry enough to work in season to put them in. There is about an average acreage of early potatoes, but they do not look as well as usual. Vegetables gave a light yield, but have sold well. The quality of dairy products has been good, with prices rather above the average. Pastures are in better condition than usual. Fruit will be a light crop.

Southboro (E. F. COLLINS). — Potato bugs are doing some damage. There is the usual acreage of Indian corn, but it is backward, the late-planted not coming up well. Haying has not begun, but there will be nearly a full crop. There will be the usual acreage in forage crops. There is the usual acreage of early potatoes, and they are looking well. There is much less milk made here than formerly. Pasturage is in about the usual condition; pastures have deteriorated in the last twenty years. Apples will be a fair crop; peaches a total failure.

Auburn (WM. GILBERT). — Indian corn is late, but may do well with good weather; acreage increased 20 per cent. There will be a forty per cent increase in the acreage of forage crops. Acreage of early potatoes about normal; the vines look well, but will be late. More grain than usual has been fed, which has kept up the flow of milk; good cows are scarce, and higher than formerly. Pastures look well since the rain, but need sunshine. Strawberries were injured by drought, and are now rotting from too much moisture, prices higher; apples a light crop; pears and grapes promise well.

Mendon (J. J. NUTTER). — Corn is looking poorly, with a small acreage. Hay will be a light crop, and haying is now at a standstill. There will be no increase in the acreage of forage crops. The acreage of early potatoes is larger than usual, but the prospect for the crop is poor. Dairy products are fully up to former years in quantity and price. Pasturage is in poor condition, but is beginning to look better. No peaches; pears looking fairly well; strawberries poor; small crop of apples.

MIDDLESEX COUNTY.

Sherborn (N. B. DOUGLAS). — Potato bugs are doing some damage. Indian corn is looking very badly; too little water at first, and too much now. What little hay was cut two weeks ago is still out. The acreage of forage crops will be increased with suitable weather for sowing them. There is about the usual acreage of early potatoes, but they have not come up well. Early peas have sold high. Quantity of dairy products somewhat short, prices higher; cows scarce and high. Pastures are improving. Drought and flood have ruined the strawberries; other small fruits promise well.

Maynard (L. H. MAYNARD). — Cut worms, onion maggots and potato bugs are doing some damage. Corn looks badly, owing to the long drought and very recent cold and wet weather. Haying has not begun, and the crop will be short. The acreage of forage crops will be increased. The acreage of potatoes is about the same as usual, but the outlook is discouraging. Market-garden crops are in poor condition, owing to the long drought. Dairy products are about normal in quantity and price; very few cattle have been sold recently. Pasturage looks well now, but has suffered from drought. Small fruits and berries will be plenty.

Pepperell (P. J. KEMP). — Potato bugs are doing some damage. Corn is very backward; acreage increased one-third. No haying done yet, and there is prospect for only half a crop, although recent rains will help. The acreage of forage crops will be increased 10 per cent. There is more than an average acreage of early potatoes, but they are very backward, and promise only a light crop. Market-garden crops are looking fairly well. Dairy products are bringing better prices than for years; cows are very high. Pasturage has grown wonderfully since the rains. Strawberries were much injured by frost; blackberries and other small fruits look well.

Dunstable (A. J. GILSON). — There is no complaint of injurious insects. Indian corn is very backward, with less than the usual acreage. Haying has not commenced, and the prospect for the crop is below the normal. The acreage of forage crops will be about the same as usual. There are few early potatoes raised here, but they are growing rapidly. Quantity of dairy products about the same as usual, with prices more satisfactory; supply of dairy cows small, and prices high. Pasturage is much improved since the rains. The outlook for all kinds of fruit and berries is very poor in this locality.

Chelmsford (P. P. PERHAM). — Potato bugs are doing some

damage. Corn is very backward. Haying will be very late, with nearly an average crop. The acreage of forage crops will be somewhat increased. There are less early potatoes planted than usual, with a poor outlook for the crop. Market-garden crops promise poorly. All kinds of dairy products are high, as are also cows. Pastures look finely. There was a large crop of strawberries, but they were ruined by the storm.

Carlisle (E. J. CARR). — Potato bugs and tent caterpillars are doing some damage. Indian corn is in poor condition, owing to drought at first and excessive moisture at present. No haying has been done, and there will be but a small crop. There will be an increased acreage of forage crops, with fair weather for planting. There is a decreased acreage of early potatoes, and they have come up poorly and are not looking well. Yield of market-garden crops small; prices high. Quantity of dairy products about the same as usual, and prices better; cows scarce and high. Pastures are in good condition. There was a poor crop of strawberries; outlook poor for apples, peaches and pears; blackberries look well.

Billerica (G. P. GREENWOOD). — Rose bugs and wire worms are doing serious damage. All corn except that planted very early on warm land looks badly. Haying has not commenced, and there is prospect of a two-thirds crop. The acreage of forage crops is increased. Acreage of early potatoes small, and crop looking poorly. Yield of market-garden crops small, and prices good. Dairy cows are high, and it is hard to find good ones; dairy products bring higher prices than usual. Pasturage has been poor, but must improve. There will be a fair crop of fall apples and pears; bloom of grapes light; blackberries full.

Tewksbury (G. E. CROSBY). — There is no special trouble from insects. Indian corn came up very irregularly, and is growing slowly. No hay has been cut. The acreage of forage crops will be increased to some extent. There is a somewhat larger acreage of early potatoes than usual; some fields are looking well, others poorly. Yield of early market-garden crops average; prices a little higher than usual. Milk is plenty and prices high. Pastures are in very good condition since the rains. Strawberries are rotting, because of the rains; outlook for blackberries good.

Lincoln (C. S. WHEELER). — There are few insects. Indian corn is very backward, but with increased acreage. Haying is progressing very poorly, with the prospect of half a crop. The acreage of forage crops will be increased if the weather permits. There is about the usual acreage of early potatoes, and the promise for the crop is not more than fair. Asparagus made an average yield, and brought good prices. Quantity of dairy products

below the average ; prices a little higher, but not enough to balance the increased cost of feed ; prices of dairy cows generally higher than usual. Pasturage is generally poor, and cattle are mostly fed at the barns. Strawberries were less than an average crop, with good prices.

Lexington (A. B. SMITH). — There has been about the usual acreage of corn planted, but it now looks as if there would be no crop. There is no weather for haying, and the crop is not over half a normal one. The acreage of forage crops will be greatly increased. Acreage of early potatoes about the same as usual, and the promise for the crop fair. On account of the season, the yield, price and prospect for market-garden crops is discouraging. Quantity and prices of dairy products about as last year, but cows are a little higher. Pastures look promising since the rains. Fruits, except winter apples, promise about average crops.

Newton (OTIS PETTEE). — There has been little damage from insects. Acreage of Indian corn about the same as in past years, but the crop is in need of warmer weather. A few hay fields on moist land promise a fair crop, otherwise the crop is very light and prematurely ripened. The acreage of forage crops will not be materially increased. Early potatoes will give a light crop ; late varieties promise much better. Early market-garden crops are much below the normal in yield, but the prospect is rather better for late crops. There is no material change from last year as regards dairy products and cows. Pastures were very short, but are now improving. Strawberries suffered from the May drought, and have not recovered ; currants have set well, but need sunshine to ripen.

ESSEX COUNTY.

Salisbury (WESLEY PETTENGILL). — Insects have not done much damage of late. Indian corn is looking poorly, because of cool weather ; acreage about average, but not as large as last year. Haying has not begun, but there is prospect of a three-fourths crop. Forage crops will show a large increase in acreage. Early potatoes are about average in acreage, and are looking well. The prospect for market-garden crops is poor. Milk is plenty ; cows are plenty, with no great demand. Pastures are looking well. Strawberries started well, but the drought and heavy rains have injured them considerably ; raspberries look well.

Amesbury (F. W. SARGENT). — Indian corn is very backward, as the early planted came up poorly, and late planting has been delayed. No haying has been done. Early weather conditions promised a light crop, but rains have prevented sowing forage

crops as yet. Acreage of early potatoes average; 25 per cent loss in coming up, and balance do not promise well. Spinach has been a fair crop; asparagus half a crop or less; other market-garden crops generally poor. Dairy products same as last year in quantity and price; good cows scarce and high. Pastures suffered from drought, but present indications are favorable. Raspberries winter-killed; strawberries wintered well, but drought and frost injured them, and present conditions prevent ripening and picking.

Groveland (A. S. LONGFELLOW). — Cut worms and potato bugs are doing some damage. Corn is very backward, with about the usual acreage. Haying has not begun, and the prospect of the crop has improved with the recent rains. Acreage of potatoes about as usual. Prices of cows and dairy products are about the same as in previous years. Pasturage is in good condition. Strawberries are a poor crop; raspberries and blackberries promise well.

Newbury (G. W. ADAMS). — Canker worms are doing some damage. Indian corn is yellow; acreage about the same as usual. Little haying done; prospect for 30 per cent of a full crop. The acreage of forage crops will be much increased. There is a full acreage of early potatoes, but they were first frozen, then dried up, and are now drowned. Market-garden crops are in bad condition all around, with prices slightly higher. Quantity of dairy products excessive; cows in good supply and prices slightly lower. Pastures in this immediate vicinity are in fair condition. Strawberries and raspberries were badly hurt by drought; pears 10 per cent and early apples about the same.

Wenham (N. P. PERKINS). — Tent caterpillars, canker worms and onion maggots are doing some damage. Corn is backward, what with drought and then excessive moisture. Haying has progressed but little, but the crop is improving. The acreage of early potatoes will be increased. Drought and excessive rains have injured all market-garden crops. Potatoes are backward, with the prospect of a poor crop. Price of dairy products slightly increased; supply of dairy cows equal to the demand. Pastures are recovering and looking fairly well. There is an average crop of strawberries; low blueberries not plenty, high ones better; raspberries and currants promising.

Manchester (JOHN BAKER). — Onion maggots and currant worm—are doing some damage. Indian corn looks yellow and backward; acreage average. Haying has not begun, but the prospect for the crop has improved. The acreage of forage crops will not be increased. Acreage of early potatoes average, and promise for

the crop poor. Early market-garden crops look very poorly; prices high as usual. Quantity of dairy products short, and prices good; dairy cows about twice as high as formerly. Pasturage is improving. Outlook for strawberries fair; blackberries good.

NORFOLK COUNTY.

Randolph (R. A. THAYER). — Canker worms and squash bugs are doing some damage. Corn is small for the season, with the usual acreage. Very little hay has been cut, with much improvement in the crop since the rains. The acreage of forage crops will be increased. There is about the usual acreage of early potatoes, with most fields showing a very uneven stand. Peas and strawberries about half crops; late market-garden crops promise well. Dairy products and dairy cows about as usual in price. Pastures are much improved since the rains. Apples promise a small crop.

Canton (E. V. KINSLEY). — Rose bugs have appeared, and potato bugs are as plenty as usual. Indian corn shows the usual acreage, but is very late and poor. Haying is at a standstill; crop much better than was expected. Acreage of early potatoes increased; many fields in blossom, but vines look poorly. Not many market-garden crops in the market as yet; prices above average. Milk is short in quantity, and about 6 per cent higher than last year; good dairy cows scarce, and \$10 to \$15 higher than usual. Pasturage has become excellent in the last few days. Strawberries are a very poor crop; blackberries excellent.

Norwood (F. A. FALES). — Potato bugs and squash bugs are doing some damage. Corn is very backward, many fields having been replanted; acreage increased about one-fourth. Very little haying has been done, and 60 per cent of a full crop is expected. The acreage of forage crops will be increased 25 per cent. Acreage of early potatoes about the same as usual, but they are very backward. Yield of market-garden crops small; prices about as usual. Fair quantity of milk, with price 3 cents per can higher than last year; cows 20 per cent higher. Pasturage is in good condition. The wet weather is rotting strawberries.

Norfolk (A. D. TOWNE). — Cut worms, rose bugs and potato bugs are doing some damage. Indian corn was mostly late planted, and is backward; acreage about 85 per cent of former years. Haying has not commenced, and there will be a three-fourths crop. Millet and Hungarian grass will be put in in increased quantities. About 75 per cent of the potatoes planted

came up and promise a fair crop. Milk is $1\frac{1}{2}$ cent per can higher than last years; cows 50 per cent higher, and scarce. There is more feed in pastures than last month. There will be no peaches or plums, and but few pears and apples; grapes about half a crop.

Franklin (C. M. ALLEN). — Indian corn is looking very well, considering the cold and wet weather; acreage increased 10 per cent. No haying done, and a fair crop may be harvested. The acreage of forage crops will probably be nearly doubled. Acreage of early potatoes same as usual; looking well, but late ones very inferior. Yield of early market-garden crops very poor, and prices good. Pastures are in very good condition. Strawberries have suffered from drought and then from moisture, and are not half a crop.

Medway (N. B. STONE). — Potato bugs are doing some damage. Corn shows a very poor stand, but with acreage somewhat increased. No haying has been done, but there is prospect of a three-fourths crop. The acreage of forage crops is very much increased. The acreage of early potatoes is about the same as usual, and they look fairly well. Yield of early market-garden crops average; prices high; later ones promise well. Quantity of dairy products increased, and prices higher; no traffic in cows, on account of foot and mouth disease. Pasturage is in good average condition. Strawberries are below average; prospect for raspberries and blueberries very good.

BRISTOL COUNTY.

Mansfield (WM. C. WINTER). — Currant worms and rose bugs are doing some damage. The acreage of Indian corn is less than usual, and the crop is looking very poorly. Little haying has been done. The acreage of early potatoes is decreased, and the crop looks rather poorly. Except peas and lettuce, there are few market-garden crops ready for the market as yet; peas bring higher prices; prospect for later crops fair. Quantity of dairy products less; prices about the same. Pastures are in fairly good condition. Pears good; apples fair; currants and blackberries good; plums, peaches and cherries none.

Norton (WM. A. LANE). — Potato bugs are doing some damage. Indian corn is looking poorly; acreage about as usual. Haying is late, with about a two-thirds crop. The acreage of forage crops will be increased. There is about the same acreage of early potatoes as last year, and they are looking fairly well. Market-garden crops need warm weather to start them. Dairy products bring

about the same prices as last year; cows are high, and the supply limited. Pastures are in good condition. Strawberries are a poor crop, and injured by the wet weather.

Dighton (J. N. PAUL). — Cut worms, potato bugs and onion maggots are doing some damage. Acreage of corn as large as usual, but it came up poorly and is backward in growth. Haying has not commenced, and there will be about half a crop. The acreage of forage crops will be increased. The acreage of early potatoes is as usual, and the crop promises to be good. Early market-garden crops made poor yields, with higher prices; later crops do not promise well. Quantity and price of dairy products about as usual; dairy cows not plenty, and higher in price. Pasturage is in good condition. Apples good; pears poor; no peaches; raspberries badly winter-killed. The strawberry crop was a bad failure, owing to the continued wet weather, which caused the berries to rot both ripe and green, so that not half the crop promised was secured.

Swansea (F. G. ARNOLD). — Tent caterpillars and elm beetles are doing some damage. Corn is late, and therefore short; acreage greater than in previous years. No haying done yet; prospect fair on good land, old fields light. Forage crops will show an increased acreage. Acreage of early potatoes about normal, but they came up poorly, and are small. Milk is 10 cents per can higher than formerly, supply equal to the demand; cows are scarce, and from \$10 to \$15 higher than formerly. Pastures are in good condition. No peaches; apples and pears set well; strawberries have sold for good prices, but the yield is not a full one.

Westport (A. S. SHERMAN). — Rose bugs are doing some damage. Indian corn is not doing well; acreage about as usual. The late rains will help the hay crop, but have prevented cutting. Forage crops will have an increased acreage. Acreage of early potatoes less than usual, and the promise of the crop is very poor. Prices for early market-garden crops good, but prospect for later ones injured by the cold weather. Prices for dairy products are the same as in former years, but good cows are much higher. Pastures are in very good condition indeed. Apples and pears promise well; peaches and cherries almost none; strawberries are yielding well, but the wet weather makes it difficult to pick them.

Dartmouth (L. T. DAVIS). — Potato bugs, squash bugs and currant worms are doing some damage. The acreage of corn is above the average, but it is uneven, and in very poor condition. Very little haying has been done, and the crop is somewhat improved since the rains. The acreage of forage crops will be increased. Potatoes are very uneven, some fields being good and

others poor. Early market-garden crops made poor yields; prices a little higher than usual. Quantity of dairy products below the average; cows very high, and not the best in quality. Pasturage is somewhat improved since the rains. Apples fair; peaches none; some pears; very few currants; strawberries medium.

PLYMOUTH COUNTY.

Norwell (H. A. TURNER). — Tent caterpillars are doing some damage. Indian corn is backward, with the usual acreage. Haying has hardly begun, and a light crop is in prospect. The acreage of forage crops will not be much increased. Potatoes are looking well, with the usual acreage. Dairy products bring the usual prices, and cows are high. Since the rains pastures are looking well. Strawberries are badly damaged by wet weather; prospect good for blueberries.

Brockton (DAVIS COPELAND). — Striped squash bugs, onion maggots and a maggot at the roots of cabbages are doing some damage. Corn did not come up well, and does not look well. No hay has been cut, but grass is growing since the rains, and a three-fourths crop is promised. The acreage of forage crops is somewhat increased. The acreage of early potatoes is about the same as usual, and they are looking well. The yield of early market-garden crops is below the average, with the usual prices, and the prospect is rather dubious for late crops. The quantity of dairy products has been light, with prices as usual; cows are high. Pastures are looking better since the rains. The outlook for fruits and berries is not very good.

Halifax (G. W. HAYWARD). — About the usual quantity of Indian corn was planted, but it has not come up well, and does not grow well. No haying has been done yet, and some have not much to do. The acreage of forage crops must be increased, or farmers will have to sell their stock. The acreage of early potatoes is about the same as usual, but some were hurt by frost and dry weather and the crop will be light. Pasturage is in very poor condition, but the rains will help from now on. Strawberries are about half a crop.

Kingston (GEO. L. CHURCHILL). — Corn is looking small, and the acreage is decreased one-half. Very little haying has been done, and the yield will be less than usual. Early potatoes promise a fair crop so far. Market-garden crops are very backward, but those not yet ready are looking quite well. Dairy products are fully up to the standard in quality and price. Pasturage is in very good condition.

Lakeville (N. G. STAPLES). — Potato bugs are doing some damage. Corn is looking rather slim, with about a 5 per cent increase in acreage. Not much hay has been cut, and the crop will be light on high land. The acreage of early potatoes will be increased. There is the usual acreage of early potatoes, and they are looking very well. Market-garden crops are about an average with former years in yield and price. Dairy products are about as in former years in yield and price; cows have been high and scarce. Pastures are in very good condition. Strawberries are a poor crop; raspberries fair.

Rochester (G. H. RANDAL). — Cut worms, currant worms and tent caterpillars have been very numerous, but have disappeared. Indian corn is in very poor condition, as it did not come up well, and the weather has since been cold and wet. There is scarcely any hay cut, and the crop will be short. The acreage of forage crops will be increased. There is a larger acreage of early potatoes than usual, and they are improved since the drought broke. Yield of early market-garden crops below average, prices good; prospect for later ones more favorable. Prices for dairy products good; cows scarce, and higher than for several years. Pasturage is improving. Strawberries rotted on the vines, but what could be secured brought good prices; raspberries looking well; currants a very small crop.

BARNSTABLE COUNTY.

Falmouth (D. R. WICKS). — Cut worms and potato bugs are doing some damage. Corn is backward, but looking well; very little grown, compared with a few years ago. Grass has changed since the rains, and it looks as though half a crop would be secured. The acreage of forage crops will be increased. Early potatoes show an increase in acreage, and are looking finely. Early market-garden crops are very small crops in yield, prices about as usual; later crops look better. Quantity and price of dairy products same as in former years. Pasturage is rather short, but is picking up. Cranberries poor; raspberries good; blackberries fine; currants a two-thirds crop; half a crop of peaches and plums; apples set well, but dropped badly.

Mashpee (W. F. HAMMOND). — Cut worms are doing some damage. Indian corn is about the average in condition, and there is a slight increase in acreage. Haying has not begun, on account of stormy weather. There will be no special increase in the acreage of forage crops. The acreage of early potatoes is about as usual. Garden crops are below the average in yield, with prices higher.

The quantity and price of dairy products is about the same as usual. Pastures are in good condition. Strawberries are a failure; raspberries above the average.

Dennis (JOSHUA CROWELL). — Onion maggots and potato bugs are doing some damage. Corn is not looking well, on account of cold, wet weather; acreage about the same as last year. Haying has hardly commenced, and the crop is light. The acreage of forage crops will not be much increased. Acreage of early potatoes about as usual, but they are not looking well. Market-garden crops are much below the average. Dairy products are about average in quantity and price. Pastures are looking fairly well. Strawberries a failure; cranberries looking fairly well, although somewhat damaged by frost.

Brewster (T. D. SEARS). — Indian corn is looking quite well, and the acreage is rather increased. The hay crop will be very short. There will be no increase in the acreage of forage crops. There is about the usual acreage of potatoes, and the crop promises to be good. The quantity and price of dairy products are about the same as in former years. Pasturage is very poor, but the recent rains are bringing it up. Cranberries are about the only berries grown for market, and the outlook is not good, on account of the late frosts.

Chatham (E. Z. RYDER). — Insects are doing very little damage at present. Corn in very backward, with a smaller acreage than usual. The hay crop will be a failure upon uplands. The acreage of forage crops will be somewhat increased. Market-garden crops are backward, with poor prospects in yield. The acreage of early potatoes is larger than usual, but the crop will be light. Dairy products are much the same as usual in quantity and price. Pastures are very much dried up. Strawberries were a small crop; blackberries and raspberries look well; gooseberries a fair crop.

Wellfleet (E. S. JACOBS). — Tent caterpillars are doing some damage. The drought has destroyed the corn crop in this locality. The hay crop is very poor, except on low lands. The acreage of forage crops will be increased. The rains of the past week have been of great benefit to early potatoes. Early market-garden crops are a failure, on account of drought. Prices are good for dairy cows. Strawberries are a failure, owing to the damp weather just when they were ripening; all other fruit promises well.

DUKES COUNTY.

West Tisbury (GEO. HUNT LUCE). — Potato bugs and rose bugs are doing some damage. Acreage of Indian corn about average, but the weather is too cold and wet for its growth. Prospect for hay crop fair, but haying has not begun. The acreage of forage crops will be increased to some extent. Quantity and price of dairy products above average; cows high and scarce. Pastures are in good condition. Strawberries poor; other fruit promises well.

BULLETIN OF
MASSACHUSETTS BOARD OF AGRICULTURE.

SUMMER MANAGEMENT OF THE DAIRY HERD.

By Prof. F. S. COOLEY, *Professor of Animal Husbandry and Dairying, Massachusetts Agricultural College.*

The severe early summer drought of the present season has served to emphasize the need of a better average among our dairy cows. It is apparent that some improvement has been made over the stock of half a century ago for dairy purposes, but it is doubtful if the quality has improved as fast as its need. It must be borne in mind that the world is moving, and that to stand still is ruin. Competition is strong, and the cost of production is on the increase. If the value of the product does not increase with the cost of production, then dairying ceases to be profitable.

Probably the average cow in Massachusetts yields about 2,000 quarts of milk or 200 pounds of butter, worth from \$50 to \$60 at present prices. With feeds costing what they have for the past two seasons, this leaves little if any margin of profit; and where cows fall below this average as half of them do, there must be very little compensation for the time expended by farmers in their care. Certainly the prevailing high wages offer strong inducements to sell the cows and enter other pursuits for a cash compensation.

The hope for dairy salvation lies in keeping a better class of cows. Where the average product is now 200 pounds of butter or 2,000 quarts of milk, it should be 300 to 400 pounds or 3,000 to 4,000 quarts. The feasibility of securing these higher yields has been amply demonstrated by many carefully kept records. Compare the value of the annual product of a dairy of 15 cows of average quality, which would amount to from \$750 to \$900, with the possible \$1,400 to \$1,800 from the same number of a better grade. Does any one believe that, after paying for the extra feed and care, there would not be left a handsome margin of profit from keeping the latter class?

The problem of securing the better grade of cows is for the breeder to solve, and both he and the dairyman who buys his cows all ready for business are too indifferent to the advantages of the better class for their own best interests. I believe that the most serious defect in the present breeding practice is lack of judicious care in the selection of the bull. It is in the sire that we look for superior qualities, and through him that we ought to expect improvement. It is well enough to select good cows for rearing heifers, but whether their progeny is inferior, equal or superior to themselves, depends on the sire. All too often the heifer is inferior to her dam because got by an inferior bull. This fact is not given the prominence it deserves, and even the use of pure-bred sires is not sufficient; for, unless the pure-bred bull inherits dairy qualities of superior order, he has no power to transmit such qualities, even though his blood be blue as the ocean and his pedigree long as the moral law. I would emphasize first the necessity of quality and inherited merit, afterwards the desirability of pure breeding and uniformity. Breeders should take more pains to secure only first-class bulls, and cow buyers should discriminate more sharply against offerings not up to standard quality.

PERENNIAL DAIRYING.

Another phase which dairying has assumed in recent years is that of continued production throughout the year. Formerly summer dairying was prevalent, as it is now in the more remote localities where pasturage is good. In Berkshire County, Vermont, northern New York, and much of the northern Mississippi valley, the summer dairy product far exceeds that of the winter months. In olden times this was doubtless the best practice, if not indeed the only possible one. It was nature's plan, and husbandmen had not yet learned how to make artificial conditions enough like summer nature to secure a winter milk flow of commercial consequence. Moreover, the demand for dairy products, as well as means of transportation, favored summer dairying.

A great change has been witnessed in the dairy season in the last few decades. Large sections where formerly only summer dairies were kept now make winter the principal season for prosecuting this business. In some instances this amounts to entire suspension of dairying during the summer months. The Connecticut valley is a notable example of this transition. Here, on many farms where large winter dairies are kept, the number of cows is reduced to the minimum in summer, to allow the farmer the time needed for tillage operations and work on special crops, such as

onions and tobacco. A more profitable system in most cases would appear to be that of perennial dairying, for which these reasons may be advanced.

First, where dairying does not continue throughout the year, the market is general, and the prices of its products, if not low, are not higher than those for the country at large. Producers cannot secure private trade at the flush season unless they are prepared to take care of their customers when the supply is short. It is a business principle that the time to secure valuable trade is when competitors find it difficult to provide for the wants of their customers. To be able to furnish the goods at such times is to demonstrate one's ability to do so at all times. So, in the butter business, our best creameries and private dairies are able to defy competition when they can furnish choice goods in uniform quantity throughout the year; while in proportion to the fluctuation in their supply they are handicapped in finding satisfactory markets for their products.

When the creamery, with a large private trade which pays several cents more than the general market, finds its cream supply cut down to a low figure, it must either drop a part of its trade, — which once lost is not easily regained, — or else supply this trade with purchased goods, — purchased at a high price in a short season. This latter method either reduces the profits on purchased products to very little, and perhaps even to a loss, or else entails the risk of dissatisfaction and loss of custom by the substitution of other and inferior goods for those with which customers are familiar.

If the creamery is co-operative, the patron's profit is less, because of a shrinkage in product when it is most needed; if it is proprietary, the price paid to patrons is regulated by the same idea. With milk companies contracts are often made whereby producers are paid for a regular product throughout the year, and a lower price for the variable product above this minimum. Obviously in this case the greater the fluctuation the larger the proportion of milk which will bring the lower price.

Farmers frequently fail to hold good contracts, simply because they do not take care of their customers in the pinch. Not only do they fail to reap the benefit of high prices in seasons of scarcity for a surplus product at that time, but are forced to accept lower prices at all times, because of inability to keep contracts in the pinch. Milkmen with private routes do better, but they also experience difficulties in holding trade without a regular uniform supply of milk. It must be obvious, to the dairyman who has carefully studied the possibilities of the business, that the highest

success as measured by the balance sheet is achieved by a perennial supply of milk. To the careless and unprogressive farmer it must also be clear that the profits from keeping cows are far from satisfactory. It is my belief that far greater satisfaction than is now felt would follow an earnest effort to maintain a constant and regular milk flow throughout the twelve months.

In whole creamery districts in western Massachusetts I have found fluctuations of from 30 to 60 per cent between the output of the highest and the lowest months. The same fluctuation in a less degree is experienced by the large milk companies of our cities. This means that from one-third to one-half of the entire product must be sold at the general market price, determined by the receipts from the country at large. This price will rule from 15 to 25 per cent lower than that obtained by constant perennial trade ; in other words, not far from one-half of our dairy product is sold at a price 20 per cent less than what might be obtained by a perfect distribution of the supply. This means an annual loss of 20 per cent of one-half of \$13,000,000, or more than \$1,000,000 which might be added to the farmers' profits by better management and very little additional expense.

It is of course generally understood that the surplus season occurs in May and June, while August and September are the dry months. The great problem in dairy feeding and management, it seems to me, is to transfer the June surplus to the September deficit.

Winter feeding, so serious a problem a half-century ago, carried on in the most primitive manner by the early settlers, has been solved in a very satisfactory manner by combined experience and scientific research. It has been so thoroughly systematized that pasturage, the main dependence of former generations, is by comparison a difficult method. It is needless, therefore, to dwell upon winter feeding and management at this time, but rather discuss the more uncertain summer conditions.

When severe drought overtakes us at the commencement of summer, as during the present season, it finds stockmen unprepared, and their only way to overcome its effect is by drawing on reserve supplies, or the liberal expenditure of money for purchase of feeds. Such an unusual occurrence cannot be anticipated, and any preparations to meet the contingency inaugurated after its effects are apparent cannot bear fruit until too late, usually long after the drought is broken.

It emphasizes the need of reserve supplies at all times, and of not running too near the shore. It also brings out the advantage of "floating capital," which may be used in tiding over times of

emergency. Farmers generally will appreciate the situation of one of the fraternity, who, in comment upon the desirability of floating capital, said, "I can't make the dum stuff float."

In recent years the winter feeding season has been lengthened out at both ends. Cows are brought in from the pastures earlier than formerly, and it is no longer the practice of the best dairy-men to turn them out while late snows are still on the ground. Provision for feeding in the barn for a considerable time after cows go to pasture is now the rule. Hay and grain are fed after the cows come in from the pasture at night. Silage remaining from the winter supply may be used, and early spring forage, to be fed green, all serve to make the transition from "hay to grass" less of a shock than it used to be. Concerning forage crops for early spring in our climate there is very little new to write. Winter rye is a standard early crop, which may be fed between May 5 and 20. It is relished by cows until it begins to blossom, and does not occupy the land when needed for summer tillage. It may be used as a nurse crop for clover, or it is out of the way for corn planting. Some judgment is needed in feeding it, or a strong taste will be imparted to the milk. This taste seems to grow with heavy rye feeding as the blossoming stage approaches. Winter wheat and winter vetch may follow rye to the relish of cows, but the uncertainty of a stand of the former and the cost of seed of the latter, together with the abundance of pasture grass the latter part of May, make their general use of doubtful economy.

Clovers are also valuable feeds at this season, and should be grown to their fullest possible extent, for reasons too well known to require statement. If not needed at the season of their maturity as fodders, they are equally valuable to cure for winter forage. But we are discussing supplementary feeds for May and June, which in pasture sections are not needed. It is unusual to meet a shortage at this season, but more often the problem of disposal of surplus confronts us. The season of drought commonly begins in July, and its effects are most apparent between that time and October. At this season drought is not unusual, but the absence of a shortage in atmospheric moisture is the exception. We may safely anticipate a "dry spell" about four years out of five, and, even if it does not materialize, the first flush of pasturage is gone by mid-summer, and pastures no longer produce as abundantly as earlier.

Every dairyman should anticipate these conditions, and be prepared to meet them. Two general schemes may be considered by farmers in this connection, namely, soiling and summer silage. In a soiling scheme for late summer and early autumn, the prin-

incipal crops for this section are oats, millet, corn, clover, peas, barley and rape.

Oats are sown in early spring on rich land, manured well the preceding season, and are ready to feed about July 1. A succession may be secured to last through July by sowing at intervals of a week or ten days from April 15 to May 15. If Canada field peas are sown with the oats, at the rate of about one bushel to the acre, the value of the feed is materially increased. One acre of land well managed should produce enough oats and peas to furnish two-thirds of the roughage required by 15 cows for a month. With a pasture capable of giving full feed to 15 cows in June, an acre of oats should make full supplement for July; but the dairyman need not fear to over-produce this crop. Any surplus not needed for summer feeding will be found equally valuable to cure as hay for winter use.

Millet follows oats and peas. Probably the most useful variety is the barnyard millet, although Hungarian and German millets make valuable catch-crops. Barnyard millet sown on rich land about the middle to last of May will be ready to feed by August 1 and be a very acceptable forage until corn has reached the milk stage. An acre of good millet ought to keep 15 cows nearly through August, supplemented by a moderate grain ration and what the pasture produces. I should not advise growing a surplus for hay, but should aim to feed the whole crop green, unless a part of it could be turned to account for seed. Its use as silage is permissible, but corn should be grown in preference for that purpose.

Corn, the king of all forage crops for the corn belt, is not likely to be supplanted by anything new, and its general use on dairy farms should be realized to the fullest extent, both for green forage and as a silage crop. Its culture and use are too well known to need extended discussion. Corn likes green farm manure better than almost any other crop, because its season of most rapid growth coincides with the season of most rapid nitrification of farm manures. They are well suited to each other. Liberal applications of potash to corn crops are profitable. Wood ashes and the potash salts are the standard sources of potash.

Clover enters into our late summer soiling scheme as a general utility crop, to be grown as largely as possible, to be fed green if needed in the absence of oats, millet or corn, or if they are in short supply to be fed in conjunction with them. Whatever clover is not needed in this connection is equally acceptable when hayed for winter use.

Barley sown with peas, during the first half of August makes a

good feed for late fall, after frosts have stopped the use of corn as green forage. We have experienced much difficulty in securing a satisfactory crop of barley; and, while it is relished by cows and good for forage, it is not always a profitable crop.

Rape, although a rank grower, and relished by cows, belongs to the cabbage, turnip and mustard family, which have been regarded with suspicion by milkmen, on account of the taste they impart to dairy products. It is our belief that, used in moderation, and fed after milking, it will not seriously affect the quality of milk, and it may become a valuable forage plant for fall feeding. It may be fed to dry cows, hogs, young stock and horses, to the saving of winter's stores, at all events.

SUMMER SILOS.

There is much that might be said in favor of summer silos. Undoubtedly the invested capital is somewhat greater where provision is made for ensiling a sufficient quantity of forage to supply the dairy herd through the summer. Perhaps the summer silo will even cost more for a given capacity than will a winter one, inasmuch as summer feeding takes cognizance both of the lessened appetites of the cows and the greater rapidity of fermentation. It becomes necessary, therefore, for summer feeding to materially reduce the surface area from which silage is fed. One should so limit the surface area for summer feeding that one and one-half inches will be daily removed when the cow's appetite for silage is lightest, and that the average feed will remove about two inches. If this is not done, not only will there be a waste of fodder, owing to excessive fermentation, but the quality of the whole feed deteriorates, even to a point of imparting undesirable flavors to the milk.

Summer silage has a great advantage over green soiling crops in the cost of production. With a heavy-yielding silage crop like Indian corn, allowed to mature and reach its maximum growth and handled in a wholesale way by improved appliances, not only is the expense per feeding unit much less than in soiling crops, but the acre product is brought up close to the limit, and the rental for land is thereby raised.

Summer silage appears to have another marked advantage over green forage, in its uniform supply and quality. Properly cured silage from ripe corn is very uniform in quality, and its use favors a very regular and uniform milk flow. This is not a preconceived notion of "book farmers," but has been substantiated by experience. On the other hand, green crops are not only fed at a considerable expense for labor, but they fluctuate in supply and vary

greatly in quality. One part of a field may be infested by weeds not relished by cows, which when fed cause a marked shrinkage in milk. Seasons vary, the weather is bad, it is inconvenient to take time for getting in green feed, and other reasons work against its practical value.

The use of silage in summer is an approach to perennial winter feeding, — a practice that is growing more and more common, but which needs no exposition in this paper.

That pastures have grown poorer in many sections appears to be a common opinion. Their uncertainty and irregularity of production are largely responsible for the demand of this discussion. The system that provides for supplementing our short pasturage will incidentally produce great improvement in the pastures themselves. By the use of supplementary forage, pastures may carry larger numbers of cattle, which will check wild growth, and enrich the soil with droppings from additional feed. The farmer himself will be more progressive, and will manage his pastures with greater skill. Thus the prosperity of the farmer, which is the concern of the Board of Agriculture and of agricultural education, will be increased.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF JULY, 1903.

ISSUED BY

J. LEWIS ELLSWORTH,
SECRETARY STATE BOARD OF AGRICULTURE.



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CROP REPORT FOR THE MONTH OF JULY, 1903.

OFFICE OF STATE BOARD OF AGRICULTURE,
BOSTON, MASS., Aug. 1, 1903.

Bulletin No. 3, Crop Report for the month of July, is presented herewith. Particular attention is called to the article at the close of the bulletin on "Bee Keeping: Its Pleasures and Profits," by Dr. James B. Paige, professor of veterinary science at the Massachusetts Agricultural College. Professor Paige has devoted considerable time to a careful study of the subject of bee keeping, and a course on the subject, under his management, will be included in the curriculum of the Massachusetts Agricultural College during the coming academic year. The object of the present article is rather to awaken an interest in the industry than to afford an exhaustive treatise on the entire subject of apiary management.

PROGRESS OF THE SEASON.

The July returns of the United States Department of Agriculture (Crop Reporter for July, 1903) state that the preliminary returns on the acreage of corn planted show it to be about 89,800,000 acres, a decrease of 4,200,000 acres, or 4.5 per cent, from the area planted last year, as revised in December. The average condition of the growing crop July 1 was 79.4, as compared with 87.5 last year, 81.3 in 1901, and a ten-year average of 89.8.

The average condition of winter wheat was 78.8, as compared with 82.2 last month, 77 on the corresponding date in 1902, 88.3 in 1901, and a ten-year average of 85.9. The average condition of spring wheat was 82.5, as compared with 95.9 last month, 92.4 last year, 95.6 in 1901, and a ten-year average of 85.9. The average condition of spring and winter wheat combined was 80, as compared with 82.9 last year, and 91.1 in 1901. The amount of wheat remain-

ing in the hands of farmers July 1 was estimated at about 42,500,000 bushels, equivalent to about 6.3 per cent of the crop of last year.

The average condition of the oat crop was 84.3, as compared with 85.5 a month earlier, 92.1 last year, 83.7 in 1901, and a ten-year average of 87.8.

The average condition of barley was 86.8, against 91.5 the previous month, 93.7 last year, 91.3 in 1901, and a ten-year average of 87.3.

The average condition of winter rye was 90.2, as compared with 91.2 last year, 93.6 in 1901, and a ten-year average of 87.5. The average condition of spring rye was 88.3, as compared with 89.3 last year, 93.3 in 1901, and a ten-year average of 87.5.

The acreage of flax was less than that of last year by about 500,000 acres, or 13.5 per cent, and the condition was 86.2.

The acreage of tobacco was greater than that of last year by about 7,000 acres, or 0.7 per cent, and the condition was 85.1.

The acreage of potatoes, excluding sweet potatoes, was less than that of last year by about 49,000 acres, or 1.6 per cent. The average condition of potatoes July 1 was 88.1, as compared with 92.9 last year, 87.4 in 1901, and a ten-year average of 92.6.

In Massachusetts the acreage of corn as compared with last year was 96, and the average condition July 1, 65; the average condition of oats, 88; the average condition of winter rye, 85; the average condition of spring rye, 98; the acreage of potatoes, 99, and the average condition, 84; the acreage of tobacco, 105, and the average condition, 95; the average condition of clover, 83; the average condition of timothy, 78; the average condition of pasture, 87; the average condition of apples, 58; the average condition of peaches, 18; and the average condition of grapes, 69.

TEMPERATURE AND RAINFALL FOR THE WHOLE COUNTRY.

[FROM UNITED STATES CLIMATE AND CROP BULLETINS.]

Week ending June 29. — Except in North Dakota and the northern portion of Minnesota the week was cooler than

usual in all districts east of the Rocky Mountains, being decidedly cool in the central valleys, southern portions of the Lake regions, Middle Atlantic States, New England and over the interior portions of the Gulf and South Atlantic States. Over the western portions of the middle Plateau region, in central and northern California and in Oregon the week was warmer than usual. From the east Gulf States northward to the upper Ohio valley, lower Lake region and Middle Atlantic States the rainfall exceeded the average, except over limited areas. There was also more than the average over a large part of the west Gulf States, over local areas in the lower Missouri and central Mississippi valleys and on the north Pacific coast. In New England and generally throughout the central valleys the rainfall was lighter than usual.

Week ending July 6. — In the lower Missouri valley and in the districts east of the Mississippi River, with the exception of northern New England and a limited area on the south Atlantic coast, where the temperature was slightly below the average, the week was warmer than usual. On the north Pacific coast, throughout the Plateau and Rocky Mountain regions, in the upper Missouri valley and in the west Gulf States the week averaged cooler than usual. Heavy rains fell during the week from the Gulf coast northward to eastern Kansas, over the western portion of the Lake region and in the upper Mississippi, upper Missouri and Red River valleys. Except over local areas there was generally less than the average rainfall in the central Mississippi and lower Ohio valleys and northern New England.

Week ending July 13. — In the central valleys, Lake region, Atlantic coast districts north of the Carolinas, and in the southern Rocky Mountain region the week was warmer than usual. Along the south Atlantic and Gulf coasts the temperature was slightly below the average. From the upper Missouri valley westward to the Pacific coast, including the middle Plateau and middle Pacific coast regions, the week was cooler than usual. Heavy rains fell in the central and east Gulf States, and in portions of the Middle Atlantic States and upper Mississippi

valley, while areas of the upper Missouri and central Mississippi valleys received more than the average. While showers giving from one-half to more than one inch were quite general in the Ohio valley, Tennessee and the Lake region, the rainfall in these districts was mostly below the average, and much less than the average was reported from the western portion of New England and the eastern portion of the lower Lake region.

Week ending July 20. — The week was cooler than usual in all parts of the country, with the exception of the southeastern Rocky Mountain slope, portions of the middle Plateau and a limited area on the central California coast, where the temperature averaged normal or slightly above. In the districts east of the Mississippi River the week was, for the most part, comparatively cool, the temperature deficiency in New England being from 5° to 7° per day. Generally throughout the Gulf States the rainfall was below the average, and over much of the central and western districts there was no appreciable amount. There was also less than the average in the upper Ohio valley, central portions of the Middle Atlantic States, northern New England and portions of the Missouri and Mississippi valleys. Over the greater part of the two last-mentioned districts, however, and also in the Lake region there was more than the average rainfall, and also over much of the Carolinas, southern New England, northern portion of the Middle Atlantic States, lower Ohio valley and southern Florida.

SPECIAL TELEGRAPHIC REPORTS.

[WEATHER BUREAU, BOSTON.]

Week ending June 29. — New England. Boston: Weather unfavorable, cool and damp until near close of week, grass improved: haying begun in south: potatoes improved: apples good though uneven and dropping to some extent; peaches poor; strawberries short crop, other berries good: tobacco all set, some hoed, crop promising: grain uneven and below average; corn poor and backward.

Week ending July 6. — New England. Boston: Week generally favorable, average sunshine, moderate rains; grass

and potatoes improving rapidly; haying delayed in hopes of better crop and time needed for cultivation; hoed crops and corn improving, but still poor; apples dropping, but balance will be of better quality; pears, peaches, plums and cherries light crops; beans rusting; tobacco growing well.

Week ending July 13.—New England. Boston: Exceptionally favorable weather; potatoes in good condition, growing well; gardens improving, but late; considerable haying in south, better yield than anticipated; small grain improving; rye being harvested in south; corn making fast growth but poor; raspberries good; blackberries promising; cranberries below average; apples uneven, below average; tobacco good.

Week ending July 20.—New England. Boston: Weather favorable for most crops; haying somewhat delayed by showers and cloudiness, but much cut, average yield, excellent quality; oats and rye excellent; half crop rye cut; potatoes and garden vegetables making good growth; corn improving and if frost holds off will be a fair crop; apples growing fast, some dropping; raspberries fine; blackberries promising; cranberries below average; tobacco excellent growth and condition.

WEATHER OF JULY, 1903.

The weather of the month, generally speaking, was uneventful, and, for the greater part, of the mid-summer type. The opening days were overcast, with occasional showers and seasonal temperatures. These were followed by several sunny days but with somewhat lower temperatures, the nights especially being cool. Little rain fell from the 6th to the 18th, and the skies were generally clear to partly cloudy. From the 8th to the 12th, inclusive, a warm wave of considerable intensity prevailed, during which the maximum temperatures ranged in the 90s. The chief storm of the month began on the 18th and continued throughout the following day, giving general and quite heavy rains. A season of showers and local storms followed the general disturbance, lasting through the 26th. In some sections the

storms were attended by high winds, hail and severe electrical discharges. The closing week was pleasant, the weather, with the exception of scattered showers, being fair, with an abundance of sunshine. The temperature during the first half of the month was in excess of the normal, while the latter half was correspondingly cool. The final result was a monthly mean temperature very near the normal. The total rainfall of the month was considerably below the normal. But on account of the fairly equitable distribution throughout the period the deficiency was hardly noticeable and not sufficient to retard crops or interrupt farm operations. July, as a whole, was a pleasant month, and crops which suffered so much from the unseasonal and unfavorable weather of the preceding month were greatly improved.

In the circular to correspondents returnable July 23 the following questions were asked:—

1. What insects are proving most troublesome in your locality?

2. What is the condition of Indian corn, and what proportion of the crop will be put into the silo?

3. What is the quantity and quality of the hay crop as compared with former years?

4. What forage crops are being raised to supplement the hay crop, for the silo, and to eke out the pastures: what is their condition and are more raised than usual?

5. What is the condition of market-garden crops, including potatoes, and how have those already harvested compared in yield and price with former years?

6. What is the prospect for apples, pears, peaches, plums, quinces, grapes and cranberries?

7. What is the condition of pasturage in your locality?

8. How have rye, oats and barley compared with former years, both as grain and forage crops?

Returns have been received from 149 correspondents, and from them the following summary has been made:—

INSECTS.

It is seldom that so little damage is reported from insects at this time of year. Potato bugs are those most numerous,

but are apparently much less injurious than usual. Other insects reported are cut worms, cabbage and onion maggots, black and striped squash bugs, currant worms, elm leaf beetles, white grubs, cattle flies, horn flies, rose bugs, plant lice, gypsy moths and cranberry vine worms.

INDIAN CORN.

Indian corn has improved somewhat during the month, but it is still very uneven and backward, probably being two weeks behind the normal, with a poor stand, due to poor germination of the seed. Warm, growing weather for the rest of the season is imperative to save a failure of the crop, and in any case not more than a fair crop will be obtained. Several correspondents report that late planted fields are now in advance of those planted earlier. It is impossible to estimate the proportion of the crop grown for ensilage, as it varies from very little in some localities to almost the entire crop in many dairy sections.

THE HAY CROP.

The frequent rains delayed haying and at the time of making returns it was still uncompleted in many sections, and considerable hay was caught out and seriously damaged. The crop improved during the month, so that nearly an average crop will eventually be secured for the State as a whole. Late cutting will, however, naturally operate to reduce the quantity of the second crop. The quality of the crop is generally reported to be good, although many fields should have been cut earlier for best results.

FORAGE CROPS.

Corn is the crop most raised for forage, and is closely followed by the millets and Hungarian grass. Oats and barley are the other forage crops extensively grown. Other forage crops mentioned are oats and peas, rye, peas, peas and beans, Soy beans, buckwheat, barley and peas, rape and vetch. Rather more of these crops than usual were planted to supply the anticipated shortage in the hay crop. Corn is backward, but the others are reported to be in excellent condition.

MARKET-GARDEN CROPS.

Market-garden crops are generally backward, but are now growing well and promise well for the future. Those already harvested have mostly given light yields, but prices have been higher than usual.

EARLY POTATOES.

At the time of making returns practically no early potatoes had been dug, but the crop was generally reported as showing excellent promise. Prices received have been good as far as reported, but are not yet established for the season.

FRUITS.

As usual in a non-bearing year the midsummer drop has greatly reduced the prospect for the apple crop, but it is still above the average for the off year. Pears, cherries and plums will be even lighter than expected, and there are practically no peaches. Quinces and grapes promise somewhat better, although far from heavy crops. Cranberries are likely to prove a short crop, owing to late frosts.

PASTURAGE.

The frequent rains have kept pastures green and growing, and they have seldom been in better condition the last of July.

SMALL GRAINS.

Rye, oats and barley have not been harvested to any extent, but promise well, notwithstanding some complaints of rust and lodging. Oats and barley are mainly grown as forage crops, and promise well for that purpose.

NOTES OF CORRESPONDENTS.

(Returned to us July 23.)

BERKSHIRE COUNTY.

Alford (L. T. OSBORNE). — Insects are not plenty, only a few potato bugs being in evidence. Corn is remarkably backward; three-fourths of the crop will be put into the silo. Hay is about a three-fourths crop, with one-fourth of it not yet harvested. Corn is about the only crop used as a forage crop. Potatoes promise well. Market-garden crops are below the average in yield. The prospect for apples is very poor, not over half a crop. Pasturage is in very fair condition. Rye, oats and barley are average crops.

Tyringham (E. H. SLATER). — Indian corn is in very poor condition; about one-fourth of the crop will go into the silo. The recent rains will make the hay crop nearly an average one and it is of excellent quality. Corn is the principal crop raised for the silo, and Japanese millet is raised to some extent to eke out the pastures. Market-garden crops are very late; only a few potatoes have been dug. There will be a fair supply of apples; the pear crop will be rather light. Pastures are looking well. Rye is little raised; oats are looking well both for grain and forage.

Becket (WM. H. SNOW). — Potato bugs are not very prevalent. Indian corn is very backward and two-thirds of the crop will be put into the silo. There is from two-thirds to an average hay crop. Hungarian grass, oats and millet are the principal forage crops grown. Potatoes look finely, but none have been harvested as yet. Apples are dropping somewhat; pears fair; plums looking well. Pasturage is in very good condition. Rye, oats and barley are full average crops.

Peru (J. Z. FRISSELL). — Potato bugs are doing some damage. Corn is in good condition; none raised for ensilage. Hay is a full average crop in quantity and quality. Barley, Hungarian grass and oats are the principal forage crops grown; oats and barley are in good condition, too much rain for Hungarian grass. Potatoes are a good crop; large yield and prices high. Apples promise a good crop; no other fruits. Pastures are in first class condition. Rye, oats and barley are better than average crops.

Hinsdale (THOS. F. BARKER). — Potato bugs are doing some damage. Corn is in very poor condition, owing to poor seed, drought and subsequent wet weather; one-fourth of the crop is raised for ensilage. Some have sown barley as a forage crop where corn failed to grow and some buckwheat. The promise for market-garden crops is very good and those already harvested gave fair yields and average prices. Apples, pears and plums promise good crops; no peaches and but few quinces and grapes. Pasturage is in very good condition. Rye, oats and barley promise full average crops.

Hancock (C. H. WELLS). — Insects are doing no serious damage. Indian corn is very small and backward; none raised for the silo. Hay is a full average crop in quantity and quality. Potatoes are looking well, but none have been dug as yet. Apples and plums are quite plenty. Pastures are looking finely. Rye, oats and barley have not yet been cut for grain.

Lanesborough (SCOTT JENKS). — Potato bugs are doing some damage. Indian corn is rather late but is growing rapidly; not many silos here. There is an average hay crop of first rate quality. Corn is the principal forage crop grown and a trifle more than usual has been put in. Market-garden crops are fully as good as last year and prices are about the same. Apples will be a very light crop; pears good; plums medium. Pasturage is in the best condition for some years at this season. Oats are in good condition.

Cheshire (L. J. NORTHUP). — Corn is not anywhere near the normal, and the condition at this time indicates empty silos. The quantity of the hay crop is about normal. Forage crops are in good condition; oats, millet, fodder corn and Hungarian grass are being raised for that purpose. Market-garden crops are beginning to be harvested; yield about as usual; too early to report on potatoes. Apples are a light crop; not many pears; no peaches are grown; plums and quinces not plenty; grapes just setting. Pastures are doing fairly well and much improved since June 1. Rye, oats and barley are good crops.

Florida (E. D. RICE). — No insects are doing damage. Indian corn looks very poorly; only one silo in town. The hay crop is about 85 per cent of an average crop in quantity. Corn, Hungarian grass, oats and millet are the principal forage crops grown. Potatoes promise about 80 per cent of a normal yield. Apples will give a fair crop; not much other fruit grown. Pasturage is in very good condition indeed. Oats are rusting badly.

FRANKLIN COUNTY.

Monroe (D. H. SHERMAN). — There are very few potato bugs. Indian corn is very backward; nearly all the crop goes into the silo. Quantity of the hay crop about average; quality good, but little cut yet. Barnyard millet, oats, barley and Hungarian grass are the forage crops raised; more sown than usual; mostly late, but looking well. Potatoes came up very uneven, but are looking well. There are but few apples and they are falling badly; no peaches; some plums. Pastures are in very fair condition. Rye, oats and barley are little raised for grain.

Colrain (A. A. SMITH). — Indian corn is late; four-fifths of the crop is raised for the silo. Hay is a full average crop in quantity and quality. Corn, Hungarian grass and millet are raised for forage crops and are looking well. Market-garden crops are in good condition and those harvested are fully equal to former years in yield and price. The prospect is fair for all kinds of fruit. Pasturage is in good condition at the present time.

Bernardston (R. H. CUSHMAN). — Potato bugs are doing some damage. Corn is very backward and unpromising as a grain crop. There is more hay than had been expected, a good average crop. There are more forage crops growing than usual, with conditions favorable. Potatoes are looking well. Garden vegetables are not average in quantity. The prospect is good for a fair crop of apples; other fruits scarce. Pastures are in fine condition for the time of year. Rye winter killed badly, but, with oats and barley, has made a good growth.

Shelburne (G. E. TAYLOR). — There are but few potato bugs. Corn is in all stages of growth, with a poor stand; perhaps one-sixth of the crop goes into the silo. The hay crop is the heaviest ever grown and is of good quality. Sweet corn and Hungarian grass are the principal forage crops grown. Potatoes look finely, but none have been harvested. Pasturage is as fresh and green as in the spring. Rye, oats and barley are not much grown.

Ashfield (CHAS. HOWES). — Cattle flies are annoying stock somewhat. Indian corn is in very poor condition. A fine crop of hay will be harvested, although it will be late. A considerable acreage of oats, barley and Hungarian grass has been sown for forage and is looking well. Potatoes promise a good crop; garden crops late. Pasturage is in very good condition. Rye, oats and barley have made a very good growth, but are mostly raised for forage.

Sunderland (J. M. J. LEGATE). — Potato bugs are doing some damage. Corn is late, but has improved wonderfully in the past

few days; half the crop will go into the silo. The hay crop is fully an average in quantity, but will hardly be average in quality. Very little is raised for forage except corn, and no more has been put in than usual. Potatoes are looking well; other market-garden crops below average in yield but have brought good prices. There will be a light apple crop, but the prospect is very poor for other fruits. There is plenty of feed in pastures, but it is not very good. Practically no rye, oats or barley are raised. Tobacco is late and the early set is spindling and cannot make anything but a light crop; the later set is looking much better. Onions are improving and should make nearly an average crop.

Wendell (N. D. PLUMB). — Potato bugs and cut worms are doing some damage. Corn is very backward; about half the crop is raised for ensilage. Hay is about a normal crop, but is somewhat backward. Hungarian and oats are the principal forage crops and there is every prospect that they will make a large growth. Potatoes are selling for \$1.50 per bushel; few other market-garden crops are ready for the market. Apples promise a normal crop; peaches and plums are a failure. The continual rains have revived old pastures greatly and they are in good condition. Oats and barley never were better, either as grain or forage crops.

Orange (A. C. WHITE). — There are the usual insects present. Indian corn is in very poor condition, as it came up poorly and many turned it under and put in other crops; three-fourths of the crop goes into the silo. Hay is fully an average crop and the quality of that cut has been prime. The millets and Hungarian grass are the principal forage crops and are looking finely, with a 25 per cent increase of acreage. The prospect is not very good for fruit of any kind. Pasturage is in normal condition. Rye, oats and barley promise well.

New Salem (DANIEL BALLARD). — Potato bugs are doing some damage. Indian corn is very backward with a poor stand; but a small proportion of the crop will be put into the silo. Haying has been much delayed by rainy weather and but little has been cut; quantity much increased. Corn, oats and Hungarian grass are the principal forage crops grown and the two latter are looking well, with increased acreage for all. Potatoes are looking well, but none have been harvested. There will be a light crop of all fruits. Pastures are very much improved by the rains and are holding out well. Rye, oats and barley made fair average yields.

HAMPSHIRE COUNTY.

Prescott (W. F. WENDERMUTH). — Potato bugs are doing some damage. Indian corn is very backward; there are but two or

three silos in town. Hay will be from two-thirds to three-fourths of a full crop of more than average quality. Fodder corn, barley, oats and the millets are the principal forage crops; condition good, except corn, and nearly double the usual acreage. Potatoes promise to be an average crop. Apples will be a very light crop as it is the off year. Pasturage is in good condition. Rye, oats and barley are full average crops, but are little grown for grain. Beans have rusted badly. Vines, especially melons and cucumbers, are dying very rapidly.

Enfield (D. O. CHICKERING). — There is no special trouble from insects. Corn is very backward; a small proportion if any of the crop goes into the silo. The hay crop compares favorably with former years in quantity and quality. Potatoes are backward and none have been marketed as yet. There will be but a small amount of fruit of any kind. Pastures are in good condition. Rye, oats and barley are about average crops, both for grain and forage.

Belchertown (H. C. WEST). — Potato bugs are doing a little damage. Corn is now growing well and looks finely, but is two weeks late; very little will go into the silo. Hay is very nearly up to a normal crop in both quantity and quality. Oats, millet and fodder corn, with some Hungarian grass, are the forage crops grown; all are growing finely and more than usual have been sown. Potatoes promise finely; other market-garden crops not up to the average. Apples fair; no pears; very few peaches, plums and quinces; grapes fair. Pasturage is in very good condition, having made wonderful improvement. Rye, oats and barley are nearly average crops.

Amherst (WM. P. BROOKS). — Onion and cabbage maggots are doing some damage. Corn is very uneven, being mostly poor and exceptionally small for the season; few fields will ripen unless weather is unusually hot during the balance of the season. Yield of hay about average and quality good, though better harvest weather is needed. Japanese barnyard millet, corn, oats and peas, barley and peas and sand vetch, to a limited extent, are the forage crops grown. Potatoes promise exceptionally well; market-garden crops, except cucumbers and melons, good; prices about average. Apples uneven, but promise very well; pears few; no peaches; plums light; grapes promise well. Pasturage is in excellent condition. Rye light; oats are rusting. Tobacco looks well. Onions very uneven; many fields thin owing to maggots.

Northampton (H. C. COMINS). — Potato bugs are our most troublesome insect. Indian corn is very backward and poorly stocked; approximately one-fifth of the crop will be put into the silo. The hay crop is as large as last year in quantity and of good

quality. Corn is the principal crop raised for the silo and green feeding. Garden crops are very poor; potatoes late and very uneven. There will be few apples and pears; no peaches; few plums and quinces; grapes fair. Pastures are in fine condition. Rye, oats and barley are fairly good crops. Tobacco is topping out low, but it is too early to determine what the crop will be. Onions are looking poorly.

Southampton (C. B. LYMAN).—Potato bugs are doing some damage. Indian corn is about 60 per cent in condition; only a small part is used for ensilage. Hay is a full average crop in quantity and quality. Corn and Hungarian grass are the principal forage crops grown. Market-garden crops are in fair condition; no potatoes dug as yet. Fruit will be a light crop for all kinds. Pastures are in very good condition. Rye, oats and barley are full average crops.

Chesterfield (HORATIO BISBEE).—No insects, not even potato bugs, have been particularly harmful this season. Corn is very small and backward and the prospect is poor. Hay compares well with a normal crop both in quantity and quality. Corn and Hungarian grass are the principal forage crops grown; corn backward and Hungarian not far advanced as yet. The prospect for apples is fair for an off year; other fruits little raised. Pastures are in good condition. Rye, oats and barley are good crops, both for grain and forage.

Goshen (ALVAN BARRUS).—Indian corn is late and small for the season; more than half will go into the silo or be fed green. The hay crop is fair in quantity, but below average in quality. Little else beside corn is raised as a forage crop. Kitchen gardens are in very poor condition. No peaches; other fruits below par. Pasturage is in fairly good condition. Rye and oats promise fair crops; the excess of wet weather caused barley to blight.

Cummington (S. W. CLARK).—We have had very little trouble from insects. Indian corn is very late; some has been plowed under and the land used for forage crops; little if any will ripen. Hay is about a normal crop of fine quality. Hungarian is the main forage crop raised; condition good and acreage rather increased. Potatoes are generally uneven; market-garden crops nearly normal. Apples look well for an off year; other fruit not much raised. Pastures are in very good condition. Rye, oats and barley are nearly all raised for forage and look fairly well.

HAMPDEN COUNTY.

Tolland (E. M. MOORE).—Potato bugs are doing some damage. Corn is almost a failure; only a small proportion of the crop will

be put into the silo. There will be about three-fourths of a normal hay crop of very good quality. Millet and corn are the principal forage crops. Early potatoes are looking fairly well. Apples are dropping badly and there will not be more than 40 per cent of an average crop. There is plenty of feed in the pastures.

Russell (E. D. PARKS). — Potato bugs are doing some damage. Indian corn is doing nicely now, but was backward in starting; but very little is raised for ensilage. Hay will be an average crop. Millet and fodder corn are the principal forage crops raised. Market-garden crops are fairly good, but those harvested have been below the average in yield and price. All fruits are in fairly good condition. Pastures are in better condition than is usual at this time of year. Rye, oats and barley are about average crops.

Southwick (L. A. FOWLER). — No insects are doing much damage. Indian corn is backward; probably one-fourth the crop is raised for ensilage. The quantity of the hay crop has been a great surprise, being better than usual. Hungarian grass, millet and sweet corn are the principal forage crops grown; condition good with acreage increased. Market-garden crops suffered from drought early in the season, but are looking fairly well at present. Some fields of potatoes look well, while others promise poor returns. Pasturage was never in better condition. Rye, oats and barley promise well.

West Springfield (N. T. SMITH). — Maggots have damaged cabbages, Swedish turnips and onions. Indian corn is backward, the early planted coming up poorly; late planted looks well and if the season is long enough will give a good crop; 30 per cent of the crop will go into the silo. The hay crop as a whole compares favorably with an average crop. Japanese millet, Hungarian grass, corn and barley are the principal forage crops grown; looking well with a small increase in acreage. Market-garden crops are not up to the average; those already harvested are about average in yield and price. Apples will give a light crop; no peaches; pears few; no quinces or cranberries. Pasturage is in unusually good condition for the time of year. Rye, oats and barley promise about average crops.

Chicopee (R. W. BEMIS). — The elm leaf beetle is doing some damage, but is not as numerous as usual. Some fields of corn are looking finely, others quite the reverse. There will be a good crop of hay secured. Corn is used to help out the hay crop more than any other forage crop. Condition of market-garden crops good and prices higher than usual. Apples are dropping badly. Pasturage has been good so far this season. Rye, oats and barley are good crops, both for grain and forage.

East Longmeadow (J. L. DAVIS). — Corn is very backward; there are only three or four silos in town. Hay is a three-fourths crop and has grown a great deal in the past two weeks, but the quality is not of the best. Oats, barley, millet and Hungarian grass, with some buckwheat, are the forage crops grown; acreage increased. Market-garden crops are very uneven in yield, but prices have been above the average. Apples, pears and peaches are poor crops; grapes plenty. Pasturage is in first class condition. Rye is an average crop and oats a three-fourths crop.

Hampden (J. N. ISHAM). — Potato bugs are the only insect noticed. The corn crop as a whole is not looking first class, but present weather is favorable. Late rains have benefited the hay crop so that it is nearly average in quantity and of good quality. Fodder corn is the principal forage crop, with some oats and peas; more than usual raised and generally in fine condition. Garden crops are late; potatoes promise a good crop, very few dug. Fall apples promise well; pears light; peaches, plums and quinces scarce; grapes set well. Pasturage is growing now as well as at any time this season. Both rye and oats are scant crops.

Monson (F. D. ROGERS). — Plant lice are doing some damage. Indian corn is very backward; probably one-third of the crop will go into the silo. Hay is an average crop, but is much finer than usual and therefore better for milch cows. Corn, millet and barley are the principal forage crops grown. Market-garden crops are looking well but are backward. There will be very little tree fruit. Pasturage is in fairly good condition. Rye, oats and barley are mostly cut for hay and have made a good growth.

Holland (FRANCIS WIGHT). — Potato bugs are doing some damage. Indian corn is very backward for the time of year; about one-sixth of the crop will be put into the silo. Hay is not quite an average crop in quantity, but is of average quality. Corn, oats and Hungarian grass are the principal forage crops grown; condition good and more raised than usual. Potatoes are looking well, but not many have been dug as yet. Apples, pears, peaches and plums will give very light crops; grapes and quinces average. The feed in pastures is green and good. Rye, oats and barley will be full average crops.

WORCESTER COUNTY.

Brookfield (F. E. PROUTY). — Potato bugs are the only insect troubling us. Indian corn is very backward. Hay is a good crop in both quantity and quality. Japanese millet and barley are the principal forage crops grown; condition good and a great deal more raised than formerly. Market-garden crops are in good con-

dition. Only a few apples promised ; pears about average ; peaches, plums and quinces little raised ; grapes a fair crop ; cranberries all killed by high water. Pastures are in good condition. Rye, oats and barley promise good crops.

North Brookfield (J. H. LANE). — The potato bug is doing some damage. Indian corn is generally in very poor condition ; probably 80 per cent of the crop will go into the silo. Hay is a full crop both in quantity and quality. Hungarian grass, millet, barley and oats are the principal forage crops grown ; oats, if early, are good ; barley, if late, is very poor. Yield of market-garden crops fair and prices good. Apples will give 10 per cent of a normal crop ; pears, 5 per cent ; no peaches, plums or quinces ; grapes, 20 per cent. Pasturage is in fine condition.

Dana (LYMAN RANDALL). — Potato bugs and cut worms are doing some damage. Corn is uneven and backward ; not more than 10 per cent of the crop will go into the silo. There will be more than an average crop of hay. Corn is the principal forage crop raised and more was planted for that purpose than usual. Market-garden crops are mostly poor ; potatoes are giving a good yield and bringing more than average prices. Apples and pears are about half crops ; peaches, plums and quinces none ; grapes and cranberries two-thirds crops. Pastures are now in good condition. Rye is not a very good crop ; oats and barley average.

Royalston (C. A. STIMSON). — Potato bugs and striped squash bugs are doing some damage. Indian corn is small and backward ; two-thirds of the crop will be used for ensilage. Hay is more than an average crop in both quantity and quality. Oats, barley and millet are the principal forage crops grown ; condition good and more than usual raised. All market-garden crops are light and prices high. Few apples and pears ; no peaches ; good crop of plums and grapes. Pasturage is in good condition. Rye, oats and barley promise good yields, but none have been cut for grain as yet.

Winchendon (ARTHUR STOCKWELL). — Potato bugs are doing some damage. Corn is very backward. There is a large hay crop in this section. Hungarian grass and oats are the principal forage crops grown. Market-garden crops are in good condition, with prices about the same as last year. There will be a fair crop of all kinds of fruit. Pasturage is in good condition. Rye, oats and barley are about average crops.

Fitchburg (JABEZ FISHER). — Corn is late but of a better color than previously. There will be fully three-fourths of an average crop of hay. The yield of most market-garden crops has been small and prices high. Apples, pears, plums and grapes will not

give over one-third of an average crop; no peaches. Pasturage is in very good condition just now. The extremes of drought, flood, heat and cold have not been favorable for healthy growth of most crops.

Westminster (A. J. FOSKETT). — Not much trouble from insects. Corn is rather backward but is in good condition. The hay crop is of good quality and rather larger yield than usual. More fodder corn than usual has been planted and it is in good condition. Market-garden crops are rather below the average in condition, but bring good prices. The prospect is good for a fair crop of apples only. Pastures are in the very best condition. Rye, oats and barley promise favorably.

Harvard (J. S. PRESTON). — No insects doing damage. Indian corn is very backward; not over half the crop will ear out and not half of that will mature. The hay crop is the largest for a number of years and is of good quality. Fodder corn, Hungarian grass, oats, with some rye and millet, are the forage crops grown; corn backward, oats ready to cut and Hungarian soon will be. Garden crops of all kinds are almost a failure. Apples very light; practically no pears, peaches, plums or quinces. Pasturage is in better condition than is usual at this time of year. Rye, oats and barley are only raised for forage.

Sterling (H. S. SAWYER). — Potato bugs are doing some damage. Indian corn is very backward; one-third of the crop will be put into the silo. Hay is an average crop in quantity and quality. Barley, Hungarian grass and oats are the principal forage crops and more will be raised than usual. Potatoes are generally very backward. Apples and pears promise fair crops; other fruits will be scarce. Pastures are in good condition since the rains.

Worcester (H. R. KINNEY). — The potato bug is calling for the most attention of any insect. Indian corn is very late but some fields that were planted very late are looking all right; most of it is for the silo. There is a fair to good hay crop of good quality. Japanese millet seems to be the most popular forage crop and is looking fairly well. Market-garden crops have given a light yield, but prices have ruled high. Apples promise fairly for an off year; pears fair; peaches, plums and quinces and grapes good. Pasturage is in good condition. Rye was a light crop; oats fair, mostly cut green.

Shrewsbury (F. J. REED). — Potato bugs are doing some damage. Corn is not looking very well. Hay is a two-thirds crop of very good quality. Fodder corn, oats, millet, Hungarian grass and barley are the forage crops grown. Market-garden crops are poor; potatoes good; yield of market-garden crops already har-

vested light with prices a little higher than usual. Prospect for apples and pears good. Pastures are in very good condition. Rye, oats and barley are looking well.

Millbury (HERBERT McCracken). — Potato bugs are doing some damage. Indian corn is very backward; perhaps half the crop will go into the silo. Quantity of the hay crop nearly average and quality excellent. Fodder corn, millet and barley are the forage crops grown; condition of corn not very good; acreage about the same as usual. Potatoes backward, injured by heavy rains, not harvested yet. There is about half a crop of apples and pears; no peaches; fair yield of plums, quinces and grapes; cranberries just blossoming. Pasturage is in excellent condition. Rye, oats and barley promise well.

Oxford (D. M. Howe). — Corn is very uneven and most of it will go into the silo. Hay is about an average crop in quantity and quality. Japanese millet is quite largely grown for forage and some sow corn to mow green. Market-garden crops are very backward. Apples and pears are few; plums, quinces and grapes fair. Pastures are now in good condition. Rye, oats and barley are average crops. All crops are coming forward with the rains and warmer weather.

Mendon (J. J. Nutter). — Potato bugs and striped squash bugs are doing some damage. Corn is poor and backward. Hay is good when well cured and is nearly an average crop in quantity. Millet, oats and corn are the forage crops grown; oats and corn are looking well; more raised than usual. Potatoes are looking well, not many harvested as yet. There will be a small crop of apples; pears look quite well; no peaches; some grapes and a few plums. The frequent rains have improved the pasturage. Rye, oats and barley are little grown.

MIDDLESEX COUNTY.

Hopkinton (W. V. Thompson). — Corn is about three weeks late; about half the crop is raised for the silo. Hay is about an average crop in quantity and quality, but is not all secured as yet. Hungarian grass and Japanese millet are looking well but are late. Not many market-garden crops raised; potatoes look well. Apples light crop; pears good; no peaches or plums; grapes a very small crop. Pastures are in good condition. Oats are a good crop; other grains not much raised.

Marlborough (E. D. Howe). — Potato bugs, striped squash bugs and horn flies are causing some trouble. Indian corn is three weeks late and very uneven; nine-tenths of the crop will be used for ensilage. The hay crop is better than many antici-

pated and is nearly an average crop. Millet, barley, rye and oats are the principal forage crops; condition good and about the usual acreage raised. All vegetables are backward and scarce and bring high prices; potatoes are better than other vegetables. Apples 60 per cent of a full crop; pease 30 per cent; no peaches; plums a full crop; quinces 75 per cent; grapes 75 per cent. Pasturage is in better condition than is usual at this season. Rye, oats and barley are average crops.

Stow (GEO. W. BRADLEY). — Potato bugs, cut worms and white grubs are doing some damage. Indian corn is in very poor condition for the time of year. Hay is about a three-fourths crop of good quality. Oats, Hungarian grass and Japanese millet are the principal forage crops grown and all need warmer weather. There are no market-garden crops to speak of; late potatoes look fairly well. The prospect is not very good for fruit of any kind. Pasturage is in very good condition at present. Oats are better than last year; no rye or barley raised. A few squashes and cucumbers for pickling were planted, but they are not up to the average in condition.

Dunstable (A. J. GILSON). — Potato bugs and currant worms are doing some damage. Indian corn is very backward; only a small percentage of the crop is put into the silo. The hay crop is about normal in quantity and of good quality. Corn, oats and Hungarian grass are the principal forage crops grown; condition good, except for corn. No market-garden crops raised and no potatoes harvested. The prospect for all kinds of fruit is very light. Pasturage is in good condition. Rye, oats and barley compare well with former years and are mostly raised for forage.

Westford (J. W. FLETCHER). — Corn is below the average in condition; about half the crop is raised for ensilage. Hay is more than an average crop. About the same acreage of forage crops is being raised as usual, and they are in good condition. Potatoes are a short crop, being small and few in the hill. Pastures are in good condition. Rye, oats and barley are good as forage crops, but poor for grain.

Concord (WM. H. HUNT). — There is less trouble from the asparagus beetle than usual. Indian corn is still very backward. The hay crop is much better than usual. Fodder corn, oats and millet are the principal forage crops grown; corn is doing poorly and oats and millet fairly well. Potatoes are looking well; asparagus did well and strawberries poorly. There will be a small crop of apples and pears; no peaches; few plums and quinces; grapes as usual. Pasturage was badly dried up by the early

drought, but is recovering now. Rye, oats and barley are not quite up to the average.

Billerica (GEO. P. GREENWOOD). — We seem to be unusually free from insects at the present time. Corn of all kinds is looking badly; a large part of the crop is grown for the silo. There is a full hay crop and the quality is good. About the same amount as usual of corn and millet is grown for forage. Market-garden crops are in poor condition and bring high prices. Fruit of all kinds will be a very light crop. Pastures are in good condition. Rye, oats and barley are but little grown.

Lincoln (C. S. WHEELER). — Potato bugs are the only insects doing damage. Corn is very backward; probably none will be put into the silo. Hay is about a three-fourths crop and the quality is below the average. Hungarian grass, Japanese millet, corn and barley are the principal forage crops grown. Market-garden crops are backward; potatoes fair; sweet corn poor. There is a very light crop of apples; no peaches; few pears and plums; grapes hardly fair. Pastures are in good condition where the brush has been kept down. Rye, oats and barley are not raised for grain and are about average for forage.

Stoneham (J. E. WILEY). — Onion and cabbage maggots are doing some damage. Indian corn is little raised. The hay crop is a fair average both as to quantity and quality. Fodder corn is the principal forage crop grown and is in good condition. Market-garden crops are backward, but bring higher prices than usual; potatoes are looking well. Apples and grapes poor; pears fair. Pastures are in good condition. Rye, oats and barley are not much raised.

Arlington (W. W. RAWSON). — The hay crop is more than an average one. Market-garden crops are late, but are looking finely and give good promise for good crops.

Newton (OTIS PETTEE). — Indian corn is looking well; about the same proportion of the crop as last year will go into the silo. Hay is about 75 or 80 per cent of a normal crop in quantity and is of good quality. Oats, corn and some millet and Hungarian grass are raised for forage. Market-garden crops promise fairly well. Pasturage is in very good condition.

ESSEX COUNTY.

Salisbury (WESLEY PETTENGILL). — Potato bugs are doing the most damage of any insect, but squash bugs are quite plenty. Corn is rather small and backward, but has made rapid growth of late; none put into the silo. Hay is nearly an average crop and was secured in good condition. Fodder corn, barley, millet and

Hungarian grass are the principal forage crops raised, and rather more than usual have been put in. Garden crops are looking very well. Early potatoes look fairly well, but are poor on low lands. Apples are looking well for an off year; pears good; no peaches; plums rather light; grapes very few. Pastures are in fine condition. Rye, oats and barley are little raised for grain, but are average as forage crops.

Haverhill (EBEN WEBSTER). — Potato bugs and white grubs are doing some damage. Indian corn is late and backward and three-fourths of the crop will go into the silo. The hay crop is somewhat below the normal in quantity, but is of good quality. Corn and oats are the principal forage crops grown. The yield of market-garden crops is less than usual with prices higher. The prospect is poor for all kinds of fruits. Pastures are in good condition. Rye, oats and barley are not grown as grain crops.

Groveland (A. S. LONGFELLOW). — Potato bugs are doing some damage. Indian corn is looking well and growing fast, but is still rather backward. About 15 per cent of the crop will go into the silo. The hay crop is nearly an average one in quantity; quality of that secured good, much uncut as yet. Oats, corn and Hungarian grass are the forage crops grown; condition fairly good; acreage somewhat increased. Potatoes are looking fairly well but are backward; yield of market-garden crops light and prices better than usual. Apples poor; pears fair; no peaches or plums. Pasturage is in very good condition for the time of year. Rye and barley are fully up to the average in yield, but are badly lodged and somewhat rusted.

Rowley (D. H. O'BRIEN). — Onion maggots and striped squash bugs are doing some damage. Corn is in very poor condition; not over one-tenth of the crop will go into the silo. The hay crop is the best for many years. Corn and Hungarian grass are raised as supplementary forage crops in about the usual amounts, but are in poor condition. Market-garden crops are in poor condition; no potatoes harvested as yet. There are a few apples, but all other fruits are very scarce. Pasturage is in good condition. Rye, oats and barley are not grown.

Topsfield (B. P. PIKE). — Potato bugs are doing some damage. Indian corn ranges from six inches to three feet in height; little of the crop is raised for silage. The hay crop is larger than last year, but is not more than half cut. Hungarian grass and corn are raised as forage crops. Potatoes are uneven and in poor condition. There will be a one-fourth yield of apples, and not 10 per cent of other fruits. Pastures are in very fair condition. Rye, oats and barley are very fair crops.

Danvers (C. H. PRESTON). — Indian corn is in poor condition; a large part of the crop will go into the silo. Hay is less than an average crop. Corn, oats and peas, millet and barley are the principal forage crops grown. Market-garden crops are in poor condition; prices higher than usual. There will be few apples, pears or plums and no peaches. Pasturage is in good condition. Rye, oats and barley are fair crops, both for grain and forage.

NORFOLK COUNTY.

Avon (S. FRANK OLIVER). — There is no general complaint of insect damage, although potato bugs are quite numerous. Corn of all kinds is very poor; only a small portion of the crop will be put into the silo. The hay crop is larger and better than for a number of years. Oats seem to be the favorite forage crop and in most cases have done well. Market-garden crops are backward. Potatoes look extra well but have not been dug as yet. Apples are scarce. Pasturage is in good condition. Oats are a better crop than usual. Nearly all the hay crop was secured from July 5th to 18th and in the best condition.

Stoughton (C. F. CURTIS). — Indian corn is about three weeks late and about 90 per cent of the crop will go into the silo. Hay is better than an average crop. Oats, Japanese millet, barley and Hungarian grass are the principal forage crops grown; condition good and twice as much as usual raised. Potatoes are growing nicely. Late vegetables are bringing better prices than usual. No peaches; few quinces or plums; apples and pears poor; grapes average; too early to judge on cranberries. Pasturage is in excellent condition. Rye and oats have yielded much better than usual.

Walpole (E. L. SHEPARD). — Potato bugs and white grubs are doing some damage. Corn is late but is growing well now. Hay was a two-thirds crop and the quality was below ordinary years. Hungarian grass, Japanese millet, fodder corn and barley are the principal forage crops and more are being raised than usual. Potatoes look finely; market-garden crops below the average; prices higher than usual. Apples and pears will give small crops; no peaches. Pastures are in better condition than is usual at this time of year. Rye, oats and barley have yielded fairly well as far as noted.

Westwood (H. E. WEATHERBEE). — Potato bugs and squash bugs are doing considerable damage. Corn is backward, most fields having been planted a second time; a small proportion will be put into the silo. Hay will be from 80 to 90 per cent of a normal crop and is of good quality. Hungarian grass and Japanese

millet are being raised as forage crops and are in good condition and growing well. Potatoes are looking well, but few have been dug; early market-garden crops made light yields. Pears and grapes will give good crops; very few apples, peaches, plums or quinces. Pasturage is good since the rains. Oats are a fair crop, mostly cut green and dried for fodder; rye or barley little raised.

Norfolk (A. D. TOWNE). — Potato and squash bugs are doing some damage. Indian corn is uneven and backward; about a fourth of the crop is raised for the silo. Hay is very nearly an average crop. Oats, millet, Hungarian grass and corn are the forage crops grown, mostly for the silo: oats and millet look well. There will be very few salable apples; pears and grapes half crops; no plums and peaches. Pasturage is in good condition. Rye, oats and barley promise average crops.

BRISTOL COUNTY.

Attleborough (ISAAC ALGER). — Potato bugs are doing some damage. Corn is in very poor condition and the present prospect is that there will not be much of a crop. Hay is about an average crop as to quantity and quality. Large amounts of millet have been sown as a forage crop and it is looking finely. Some fields of potatoes are doing finely, others not so well. All fruits are making a small showing. Rye, oats and barley are about average crops, both for grain and forage crops.

Dighton (J. N. PAUL). — Potato bugs are doing a little damage. Corn promises about two-thirds of a crop, did not come up well; only a small proportion will be used in the silo. Hay is about a two-thirds crop of good quality. Hungarian grass, millet and fodder corn are the principal forage crops grown and more are being raised than usual. Market-garden crops good; potatoes good; prices for early market-garden crops good. Apples fair; pears good; no peaches, plums or quinces; grapes good. Pastures are in good condition. Rye and oats good; barley not grown. Strawberry plants are making good growth. Onions are looking well, but are thinly stocked as they did not come up well and have been badly worked by maggots.

Westport (A. S. SHERMAN). — Potato bugs are doing some damage. Indian corn is not doing as well as last year; no silos. Quantity of the hay crop as large as usual and quality very good. Corn, rye and oats are raised quite extensively for forage crops; good condition, no more raised than usual. Potatoes have improved decidedly of late and those harvested yield well. Apples a fair crop; pears plenty; no peaches; plums scarce; no quinces;

grapes abundant. It is seldom that pastures are in as good condition at this time of year. Rye, oats and barley promise well.

New Bedford (F. H. MOSIER). — Cut worms, rose bugs and potato bugs are doing some damage. Corn is in poor condition; no silos in this locality. Hay is less than an average crop in quantity, but is of average quality. Corn was planted for fodder, but did not come up well and is generally in poor condition. Garden crops are below the average, also potatoes; prices higher. There will be a few apples and pears; no peaches, plums or grapes. Pasturage is improving from recent rains. Rye, oats and barley are fair for forage and light for grain. The onion crop is nearly a failure.

Acushnet (M. S. DOUGLAS). — Potato bugs are doing some damage. Indian corn is in very good condition; only a small proportion will go into the silo. There is a better hay crop than last year and the quality is good. Fodder corn has been planted to a greater extent than usually. Market-garden crops are in good condition. No peaches; few apples and pears; no grapes; very few plums; cranberries good. Pastures are in good condition. Rye, oats and barley are more grown this year than formerly and taken as a whole promise fairly good crops.

PLYMOUTH COUNTY.

Marshfield (J. H. BOURNE). — Cut worms, potato bugs, squash bugs, horn flies and green cattle flies are all present. Indian corn came up poorly and is only just beginning to show signs of growing. Hay is a little less than an average crop and that which has been cut is of good quality. Soy beans, Japanese millet, rape, oats and fodder corn are the principal forage crops grown. Market-garden crops are backward but improving. Apples are less than an average crop; no peaches or plums; pears average; cranberries below average. Pastures are improving. Rye, oats and barley are fairly good crops.

Hanson (F. S. THOMAS). — Insects are doing little damage. Corn is looking well; not much is raised for the silo. The late rains helped the hay crop and it is now about an average crop. Fodder corn is the principal forage crop grown and it is in good condition. There will be but little fruit owing to the early drought. Pasturage is in good condition. Rye, oats and barley are but little grown either for grain or forage.

West Bridgewater (C. P. HOWARD). — Potato bugs are doing some damage. Corn is looking very poorly; more than half the corn crop is planted for the silo and one-fourth fed green, leaving

less than one-fourth to ripen. A full average hay crop will be secured. Rye is cut for early feed ; oats, barley, peas and Hungarian grass are all grown for forage crops ; corn is the best green crop in its season. Potatoes are looking well, but few have been dug ; prices are high. There will be a few apples and plenty of pears. Pasturage is in very good condition. Rye, oats and barley are raised only for forage.

Bridgewater (R. CASS). — Potato and squash bugs are doing some damage. Indian corn is late and uneven ; none raised for the silo. The hay crop will be a fair average on good land ; quality good. Fodder corn, Hungarian grass and Japanese millet are the principal forage crops raised ; condition good and acreage increased. Market-garden crops are below the normal in condition ; potatoes good. The prospect for fruit is poor. Rye and oats are good average crops.

Carver (J. A. VAUGHAN). — Potato bugs are doing some damage. Hay is a good average crop and was secured in good order. Millet and Hungarian grass are the principal forage crops grown and show a larger acreage than usual. Market-garden crops are in average condition. Owing to late spring frosts there are fewer apples than usual, no peaches and but few grapes. Pasturage is in good condition. Rye, oats and barley are average crops, both for grain and forage. Cranberries have not blossomed well, owing we believe to late frosts in May, and the crop will not be large.

Mattapoisett (E. C. STETSON). — Potato and squash bugs are doing some damage. Where Indian corn came up it is looking well ; no silos in this section. The hay crop is larger than for a number of years ; quality good. Fodder corn and millet are the principal forage crops grown ; condition good, with about the usual acreage. Market-garden crops are in good condition and prices are a little better than usual. Not many apples ; pears good ; not many peaches, plums or quinces ; cranberries blossomed well. Pastures are in very good condition. Rye, oats and barley are about average crops.

BARNSTABLE COUNTY.

Bourne (D. D. NYE). — Potato bugs are doing some damage. Indian corn is in very good condition ; no silos in town. The hay crop is about half a normal crop and is equal to last year in quality. Fodder corn, millet and Hungarian grass are the principal forage crops grown. Market-garden crops are in good condition ; very few potatoes harvested. Cranberries promise about an average crop ; tree fruits very scarce ; apples dropping. Pasturage is

looking finely. Rye, oats and barley compare well with former years as forage crops ; very little grown for grain.

Barnstable (JOHN BURSLEY). — Fire worms on cranberries and elm leaf beetles are doing some damage. Corn is the smallest at this date for 25 years ; none raised for silage. The hay crop is 85 per cent of an average crop ; quality fair. Hungarian grass and millet have been sown quite extensively since July 1st. Potatoes look well, very few harvested as yet. Apples and pears good ; peaches and plums small ; grapes and cranberries fair. Pastures are in good condition. Rye, oats and barley are fully up to the average both as grain and forage crops. Showers at this season help those who grow White French or Cape turnips, the bulk of the crop being planted the first half of July.

Harwich (A. N. DOANE). — Potato bugs and cranberry vine worms are doing some damage. Indian corn has improved and there will be a fair crop. Hay is less than an average crop and of inferior quality. Fodder corn is sown to take the place of the short hay crop. No apples, pears, peaches or plums ; quinces a fair crop ; cranberries less than half the crop of 1902. Pastures are improving. Rye, oats and barley are about average crops for grain and forage.

Orleans (F. E. SNOW). — Potato bugs are doing some damage. Corn is backward, but is growing well now ; none used for silage. Hay is a short crop. Millet and fodder corn are the principal forage crops grown and rather more millet than usual has been planted. Potatoes are doing well now. Apples rather scarce, also peaches and plums ; pears fairly abundant ; cranberries fair. Pasturage is in quite good condition. Oats are looking well now, no large amount raised.

Eastham (J. A. CLARK). — No insects are doing damage. Indian corn is backward. Hay is a fair crop of good quality. Market-garden crops, including potatoes, are looking well. Apples and pears will give fair crops. Pasturage is in good condition.

DUKES COUNTY.

West Tisbury (GEO. HUNT LUCE). — Potato bugs are doing some damage. Indian corn has improved, but is rather backward. The hay crop is average in quantity and quality. Potatoes are a good crop and prices are high. Apples and pears will be plenty. Pasturage is in very good condition. Oats are an average crop.

BULLETIN OF MASSACHUSETTS BOARD OF AGRICULTURE.

BEE KEEPING: ITS PLEASURES AND PROFITS.

BY JAMES B. PAIGE, *Professor of Veterinary Science, Massachusetts Agricultural College.*

Forty or fifty years ago nearly every farmer kept a few swarms of bees. They furnished him and his family with a healthful article of food that was considered almost a necessity. To-day it is the exception rather than the rule that one sees about the farmer's home these producers of the most wholesome and delicious table delicacy that it is possible to obtain.

In addition to the production of honey, bees perform an invaluable service to the farmer and fruit grower by the fertilization and cross fertilization of flowers. The value of what they do in this way cannot be estimated. Growers of hothouse cucumbers and melons make use of them to carry pollen from flower to flower. This work was formerly done by hand by the use of a camel's hair pencil. It has been found that it can be more cheaply and as effectively done, at all times of the year, by allowing bees to circulate in the hothouse, visiting the flowers upon the vines as they develop.

Bee keeping not only serves as a source of profit to those who keep them, but they afford a vast amount of enjoyment to one interested in the study of insect life.

The Year Book of the United States Department of Agriculture for 1901 says, in part, of bees and production of honey and wax: "About one farm in nine in the United States was reported as keeping bees in 1900. The largest total value of honey and wax produced by any State in 1899 was by Texas, \$468,527. Alaska made no report, and the value of the product in the District of Columbia was \$56. The next lowest total was \$1,149, for South Dakota." Figures relative to this subject for the United States, with those of the five leading States in which the bee industry brings the largest returns, and Massachusetts, are given to show how generally they are kept throughout the country and the income derived from them: —

Bees, Honey and Wax.

[FROM THE TWELFTH CENSUS OF THE UNITED STATES.]

STATES.	Number of Farms.	Number of Farms reporting.	Swarms of Bees June 1, 1900.	Value of Bees June 1, 1900.	Pounds of Honey produced in 1899.	Pounds of Wax produced in 1899.	Value of Honey and Wax produced in 1899.
The United States,	5,739,657	707,261	4,109,626	\$10,186,513	61,196,160	1,765,315	\$6,664,904
Texas,	352,190	60,043	392,644	749,483	4,780,204	159,690	468,527
New York,	226,720	22,738	187,208	593,784	3,422,497	84,075	352,795
Missouri,	284,886	41,145	205,110	508,217	3,018,929	69,258	348,604
Illinois,	264,151	34,932	179,953	486,164	2,961,080	75,290	343,200
California,	72,542	6,915	129,444	363,885	3,667,738	115,330	331,939
Massachusetts,	37,715	1,799	8,381	35,751	109,050	6,250	18,412

Among other things shown by the above table is that Massachusetts, with slightly more than one-half the number of farms that California has, reports only about one-sixth as many as having bees upon them. In Massachusetts we have only a total of one-fifteenth as many swarms of bees as California, yielding an annual income of \$18,412 for honey and wax, against \$331,939 for the latter State. In other words, the 6,915 bee keepers of California receive eighteen times as much income from their bees as do the 1,799 apiarists of Massachusetts. This difference can be accounted for in part by the slightly larger income derived from each swarm in California over that obtained from a Massachusetts colony. The California bees yield an income of about \$2.57 per swarm; those of Massachusetts, \$2.20.

Undoubtedly the flora and climate of some of the western and southern States are more favorable for bee keeping than are those of Massachusetts, but these conditions do not account for the great difference in the income derived or to be derived from bees.

A reference to the complete table printed in the Year Book of the Department of Agriculture shows that New York stands, of all the States and territories, second in value of honey and wax produced, \$352,795, while eighth in number of swarms kept. The average money yield in 1899 for honey and wax (not including increase in swarms) was \$1.88 per swarm. It would seem that our State is as well located, geographically, for successful bee culture as is New York. That we have as large a nectar yielding flora there can be little doubt.

A comparison of the returns from Vermont and Massachusetts shows that the Vermont farmers keep a much larger number of swarms of bees than our farmers do. With practically the same number of farms reporting, Massachusetts having only 79 more than Vermont, Massachusetts farmers report only 8,381 hives, valued at \$35,751, \$4.26 per hive, while Vermont has 12,836 swarms, valued at \$46,953, \$3.58 per swarm. The total value of honey and wax to Vermont bee keepers in 1899 was \$27,290, while our own farmers received only \$18,412 for their bee products. Much of the Vermont honey is sold in Massachusetts.

The geographical situation of our own State is more favorable for bee keeping than is Vermont; and there seems to be no good reason why we should not produce sufficient honey for home consumption, instead of purchasing from neighboring States. Our cities are teeming with people of moderate means who are anxious to move into the country in order to enjoy more quiet and healthful surroundings and occupations. The great difficulty that confronts them is to find a locality not so remote from a large place

as to debar them of all social privileges and the advantages of a market, yet at the same time sufficiently removed to enable them to purchase land at a price within their reach, capable of furnishing support for their families. From a lack of experience necessary for them to engage successfully in general farming, and the cost of equipping a farm with the required stock and tools to carry it on, these people must, if they leave the mills, stores and shops of the cities and take up a residence in rural sections, engage in a special branch of agriculture that they can familiarize themselves with through observation and the study of books.

Market gardening, the growing of small fruits or flowers, poultry raising and bee keeping are the agricultural specialties either engaged in alone or in combination that are best adapted for those who are compelled, on account of ill health or from other circumstances, to leave the cities and resort to the country to take up agricultural pursuits to gain a livelihood.

There are seasons, owing largely to climatic conditions, when bees in Massachusetts are unable to collect and store more honey than is required for the raising of brood and food for winter use. For this reason bee keeping for either comb or extracted honey may not yield a very large income. To provide against such an exigency it is not advisable for one to depend upon bee keeping as a sole source of income, but to combine with it some other specialty. Which of those specialties already mentioned to be selected should depend upon location, kind of soils, demands of the market, etc.

Suitably situated in a locality for the advantageous growing of poultry, in a vicinity where there exists a variety of honey-yielding plants, a combination of these two industries would go well together. Poultry requires almost constant care in winter, at a time when bees are inactive. During late spring, summer and early fall poultry needs little attention, except at morning and evening. During the middle of the day the time could be utilized in caring for bees. In fact, it is not possible to handle them except at this time. They resent interference except on warm days, then only during the latter part of the forenoon or early part of the afternoon. When bees are most busy at work and most numerous about the hive is the best time to handle them. On dark, cool days, or very early or late in the day, they are almost certain to attack one who disturbs them.

The July 9, 1903, number of the "Youth's Companion" contains a short article upon the topic, "The Woman and the Farm," which relates to the possibilities of gaining a livelihood by engaging in those specialties of agriculture to which reference has been

made. The article says in part: "Two essays read before agricultural societies in the central west suggest a wider and truer view of the situation. . . . The heroine of the other (second) essayist was a successful stenographer, who, wanting a house of her own, pitched upon a three-acre place which was far from cities, but within reachable distance of several summer hotels. By study, perseverance, tact and common sense, she presently found herself marketing every year five thousand pounds of honey, fifteen hundred ducks and quantities of fine fruit." In addition the writer says: "Probably there is not a county in any State which does not offer similar opportunities for tired women to rest by change of occupation, and meantime earn a living; or for ambitious women to take up fruit growing, market gardening, poultry keeping, or some other specialty, and carry it on at a profit."

There is hardly a locality in Massachusetts where there are not sufficient honey-yielding flowers to allow of successful bee keeping. This applies not alone to the country but quite as well to the cities. In rural districts, wild flowers and cultivated plants are to be depended upon for a honey supply. In cities the flowers of cultivated ornamental plants and those of the ornamental trees in the streets and parkways and about the residences often yield a bountiful supply of honey.

The writer has observed during the present year in the Public Gardens, on the Common and in the parkways in the city of Boston and vicinity large numbers of the best honey-producing plants and trees to be found anywhere. Last year he observed growing wild in great abundance along the shore near the city of Salem the sweet clover (*melilotus alba*) that is so attractive to bees and a prolific honey producer—remaining in bloom for more than a month.

A large farm in a rural district is not essential for the successful keeping of bees. They thrive in towns, villages and even large cities. Says Frank Benton in his bulletin entitled "Bee Keeping:" "It even happens in some instances that bees in cities and towns find more abundant pasturage than in country locations which are considered fair." He cites Washington, D. C., as an example, owing to the presence of large numbers of linden trees that have been planted along both sides of many of the streets and avenues of the city.

Swarms of bees so situated that they are protected from strong winds and the extreme cold of winter will thrive in almost any locality in Massachusetts. It is best that the hive be placed near the ground, as it can be more easily reached by the bees returning

heavily laden with honey from the fields. This is, however, not absolutely necessary, as swarms do well that are kept in attics of houses or barns or other buildings, the bees being allowed to enter and leave the hive through small openings in the walls of the buildings. In localities where there is not too great an exposure or winds too strong, hives of bees have been known to prosper when placed upon the flat roof of a city building.

In locating a hive of bees in a thickly-settled community, it should never be so placed that the bees in leaving or approaching the home would be compelled to cross a path or walk frequented by people.

During the early part of July the writer examined a year-old swarm of bees, kept in the rear yard of a house in a country town, that had already during the season produced 60 pounds of surplus honey. He has upon his own three-quarters of an acre home lot in a country village six swarms of bees that have, up to date, stored more than 100 pounds of surplus comb honey of the finest quality. In addition to this some have given off large early swarms, each of which should, under favorable conditions, store 20 pounds of honey in excess of that required to live upon during the coming winter.

Considering that a swarm of bees may be purchased, in a modern, movable, frame hive, complete, including a super for holding surplus honey boxes, in May or June for \$6 or \$7, the yield of 20 to 40 pounds of surplus honey worth from 15 to 25 cents per pound, and the production of a swarm of bees that may, under favorable conditions, produce 10 to 20 pounds of surplus honey, or be sold without a hive for \$1.50 to \$2.50, the return for the money invested is most certainly a good one.

Such results can only be expected when the conditions for a good and continuous honey flow exist, and the bees are carefully looked after. It is the exception rather than the rule that conditions are so unfavorable for honey production that a strong swarm will not gather in excess of that required for brood rearing and winter food supply.

It is with bee keeping as with every other business, in that it is most successfully conducted when given intelligent and constant care. It usually happens, nevertheless, that with scarcely any care a few swarms of bees will, if favorably located, gather and store surplus honey, the only attention given them being to remove the filled honey boxes in the fall and replace them with empty ones in the early spring. New swarms may or may not be saved. The writer is acquainted with several parties, living in villages,

each of whom keeps in his yard two or three swarms of bees under the conditions mentioned, and receive from each of them each year from 20 to 60 pounds of honey.

It is advisable for one not familiar with the business, who contemplates starting in with bee keeping, to at first start in a small way with only one or two swarms, and then with a variety of bees that is quiet and easily handled. For this purpose Italians are preferable to the common black bees. The latter are more restless and easily angered when they are disturbed. With a good bee smoker and a veil one need have but little fear of stings, provided quiet, good-tempered bees are kept.

With one or two swarms to begin with the natural increase will build up the apiary quickly. By working with a few at the beginning one gets the experience needed to successfully manage a large number of swarms with little difficulty.

The cost of starting an apiary is comparatively small. The following list of articles, with average price of each, includes all things required:—

Swarm of bees in hive complete,	\$7 00
Extra hive with foundation comb, including super for surplus honey,	3 50
Bee smoker,	85
Veil,	50
Porter bee escape, for clearing supers of bees,	35
Freight,	1 00
Incidentals,	2 00
Total,	\$15 20

This is the outfit required for producing comb honey. If extracted honey is desired it would be necessary to add an extractor, costing from \$8 to \$10, according to size and pattern.

Brood frames, with full foundation comb, are recommended. In case these are not used the combs will be built so irregularly that it will be found impossible to remove the frames without seriously breaking the combs, to the detriment of the brood and to the annoyance of the manipulator. Where full foundation sheets are used they are built out in large, flat, regular combs that allow of the removal of a frame from the brood chamber without disturbing or breaking other sheets of comb. Another distinct advantage of using full sheets of foundation is that more worker comb and less drone comb is built. As the drone bees do not add to the working capacity of a hive it is advisable to prevent their production as much as possible. This can only be done by fur-

nishing foundation stamped with worker cells upon the surface. These worker cells, outlined by the press, will be drawn out into full worker cells by the bees. On the other hand, if they are allowed or are compelled to build their own combs, without the guide furnished by the embossed sheet of foundation, drone comb will be constructed to a much greater extent than when the foundation is furnished.

In this short article it is not the intention of the writer to give full and explicit directions for the selection of supplies, the manipulation of bees or the conducting of an apiary. This information can be obtained from a study of the books enumerated at the end of this paper, also by visiting a well-conducted apiary and observing the apiarist at his work.

A few of the more common mistakes made by the novice may be avoided by observing the following directions : —

In selecting hives always select one of the modern movable frame varieties, with super for surplus honey boxes. The old-fashioned box hive is so disadvantageous in so many respects that it should never be made use of. If bees are purchased in a box hive they should be transferred to a movable frame hive at the earliest possible time.

As to the variety of the modern hive to be selected, it makes but little difference, provided it is strongly built, easy to obtain at short notice and convenient to manipulate. As a rule, the simpler the construction the better. There are many varieties on the market (each of which is praised by its inventor and advocated by certain bee keepers). Anti-swarming, double-ventilated and double-covered hives and those of similar description possess few or no advantages over the ordinary modern hive, except in the minds of the inventors.

It is always advisable to have all hives in the yard alike, in order that parts may be interchanged, as is frequently necessary.

Unless one has at his disposal wood-working machinery and plenty of spare time it is better to buy hives of a dealer than to make them. To get the best results they must be accurately and strongly made, to provide proper space for the bees and accurate fitting of all parts, to prevent excessive glueing by the bees and to allow an interchange of every fixture. For one wishing to economize in the purchase of hives it is better to buy them unpainted in the "flat" and put them together and paint them rather than to attempt to build them, running the risk of mistakes that are almost certain to be made.

The accompanying illustrations show two of the many service-

able and practical hives. Both are similar but vary somewhat in shape and construction, as will be seen by a study of the illustrations.

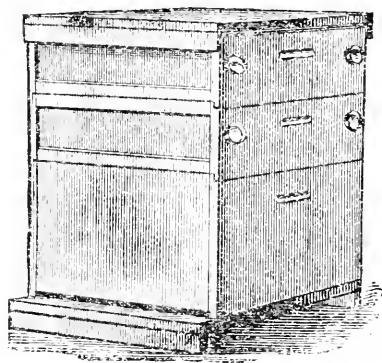


FIG. 1*

Fig. 1* shows the Cary simplicity hive, with two supers. As will be observed, the parts are halved together in such a manner that they overlap, making a rain and weatherproof joint. These hives are interchangeable in every part and are especially adapted to tiering up.

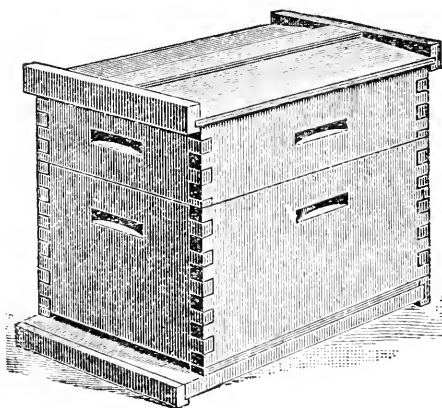


FIG. 2.

Fig. 2* represents the dovetailed or lock corner hive, as made by A. I. Root Company, Medina, Ohio. It is a strong, convenient and serviceable hive, but, unlike the Cary simplicity hive, does

* These illustrations are from the catalogue of W. W. Cary & Son, Lyonsville, Mass., manufacturers and dealers in bee supplies, and are used with their permission.

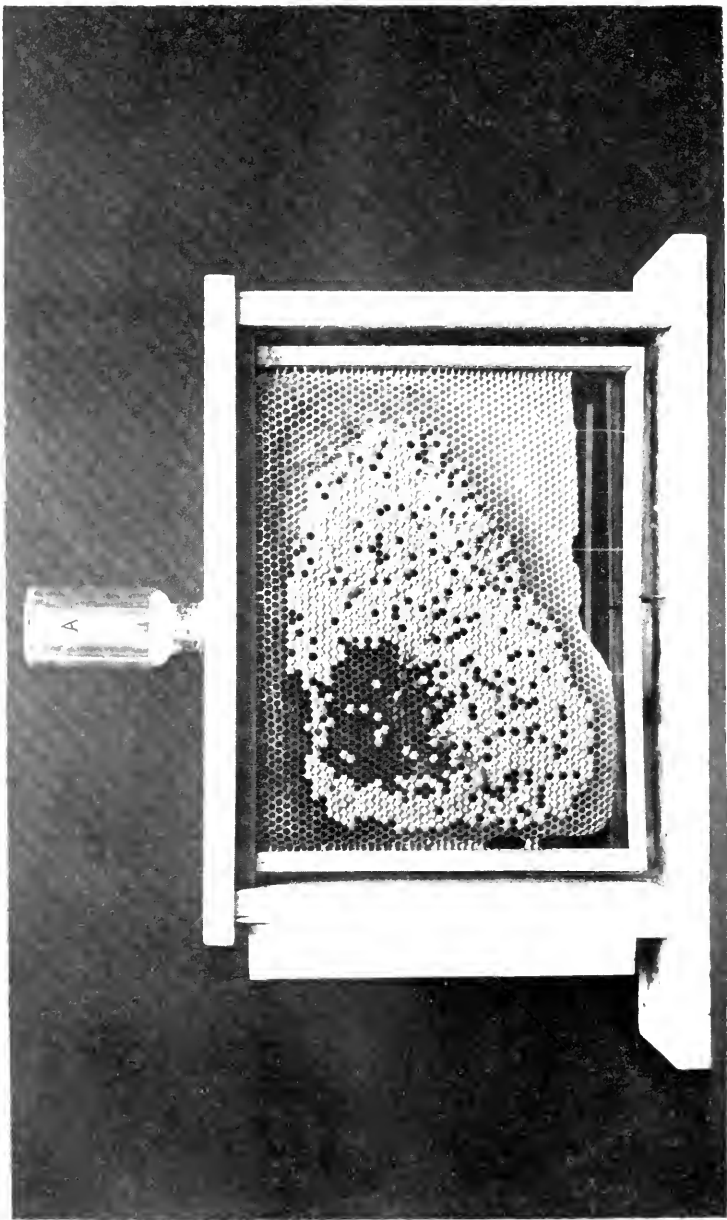


FIG. 3.—OBSERVATION HIVE.

not have the edges rabbeted so that the parts overlap when placed in position. Each of these hives is made in several patterns with a variety of fixtures, to suit the fancy of the purchaser.

Much pleasure may be had and information gained by the study of bees kept in an observation hive. Such a hive is shown in Fig. 3. It is constructed with glass sides and holds a single frame of comb. At B is a sliding box covered with wire cloth; this can be raised or lowered to open or close the entrance to the front of the hive. At A is shown a feeder, consisting of a bottle through the stopper of which is a glass tube one-half inch in diameter. The bottle, after being filled with a saturated solution of granulated sugar in water, is inverted and the glass tube placed in an opening in the cover, protected on the inside by means of a piece of wire cloth. As fast as the bees remove the syrup from the end of the tube, air enters the bottle and more syrup runs down upon the wire cloth.

The hive should be arranged so that the sides may be covered to keep out the light when the bees are not under observation, otherwise the glass will be covered with wax and glue by the bees for the purpose of darkening the hive.

When a frame of brood covered with bees provided with a queen is placed in this glass-walled hive it is possible to observe them at their work. The movements of the queen may be watched as she travels over the comb depositing eggs in the empty cells. The development of the eggs into larvæ and later pupæ, the capping of the brood and its escape from the cells when fully developed, the storing of the honey and pollen, and all may be studied at will. If the queen is removed the process of queen cell building and the rearing of the new queen may be observed at every stage.

Such a hive may be placed in a living room, school-room or other place desired, and the bees be allowed to fly to the fields through a convenient opening made in the wall, window sash or frame. Whenever the comb is fully built down and completely filled with honey and brood it is necessary to replace it with a new sheet of comb, upon which there is room for the bees to work, otherwise the queen, finding her quarters restricted, will leave the hive, taking most of the bees with her, to go in search of more commodious habitation. If a sufficient number of bees do not remain to mature the brood, or in case no newly laid eggs are present in the hive from which a new queen may be reared, the swarm will perish.

The writer is an enthusiast over bee keeping, having, during his few years' experience with bees, derived a small profit and a large

amount of pleasure in working among the industrious little toilers and in feasting upon the honey which they have produced.

To suggest to some one a pleasant means of recreation, coupled with a possible source of profit, is the main object of this paper.

To one desiring more information concerning this particular industry the reader is referred to the following publications:—

“Bees and Bee Keeping,” by Frank R. Cheshire. 2 vols. Vol. I, scientific; Vol. II, practical.

“The A. B. C. of Bee Culture,” A. I. Root.

“Langstroth on the Honey Bee.”

“The Bee Keeper’s Guide, or Manual of the Apiary,” Prof. A. J. Cook.

“The Honey Bee—A Manual of Instruction in Apiculture,” Frank Benton, M.S., United States Department of Agriculture, 1899.

“Bee Culture,” Dr. C. C. Miller. Bulletin 77, Pennsylvania Department of Agriculture.

The following are some of the leading journals relating to bee culture published in the United States:—

“Gleanings in Bee Culture,” Medina, Ohio.

“The American Bee Journal,” Chicago, Ill.

“The American Bee Keeper,” Falconer, N. Y.

“The Bee Keeper’s Review,” Flint, Mich.

The Massachusetts Agricultural College will offer the coming year a short course in bee culture, beginning the fourth Wednesday of May and continuing two weeks. For full particulars, address Dr. H. H. Goodell, Amherst, Mass.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF AUGUST, 1903.

ISSUED BY

J. LEWIS ELLSWORTH,
SECRETARY STATE BOARD OF AGRICULTURE.



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CROP REPORT FOR THE MONTH OF AUGUST, 1903.

OFFICE OF STATE BOARD OF AGRICULTURE,
BOSTON, MASS., Sept. 1, 1903.

Bulletin No. 4, Crop Report for the month of August, is presented herewith. Particular attention is called to the article on "The management of poultry on small farms," by John H. Robinson, editor of "Farm-Poultry," which is printed at the close of the bulletin. It is of interest to all farmers who keep poultry, and should be especially valuable and interesting to all those who are unable, through their situation, to follow the free range or colony plan.

PROGRESS OF THE SEASON.

The August returns of the United States Department of Agriculture (Crop Reporter for August, 1903) show the condition of corn on August 1 to have been 78.7, as compared with 79.4 on July 1, 86.5 on Aug. 1, 1902, 54 at the corresponding date in 1901, and a ten-year average of 84.4.

Preliminary returns indicate a winter wheat crop of about 410,000,000 bushels, or an average of 12.4 bushels per acre, as compared with 13.8 bushels last year. The average condition of spring wheat on August 1 was 77.1, as compared with 82.5 a month earlier, 89.7 in 1902, 80.3 the year previous, and a ten-year average of 80.2.

The average condition of the oat crop was 79.5, as compared with 84.3 a month earlier, 89.4 in 1902, 73.6 in 1901, and a ten-year average of 82.6. The proportion of the oat crop of last year still in the hands of farmers was estimated at 7.4 per cent, as compared with 4.2 per cent of the crop of 1901 in farmers' hands a year ago, 5.9 per cent of that of 1900 the year previous, and an eight-year average of 7.4 per cent.

The average condition of barley on August 1 was 83.4, against 86.8 a month earlier, 90.2 in 1902, 86.9 in 1901, and a ten-year average of 83.4.

The average condition of spring rye was 87.2, as compared with 88.3 a month earlier, 90.5 on Aug. 1, 1902, 83.6 at the corresponding date in 1901, and a ten-year average of 85.3.

The acreage of buckwheat is less than that of last year by about 500 acres, or .1 per cent. The condition of buckwheat August 1 was 93.9, as compared with 91.4 on Aug. 1, 1902, 91.1 at the corresponding date in 1901, and a ten-year average of 89.8.

The average condition of flax on August 1 was 80.3, as compared with 86.2 a month earlier.

The average condition of tobacco on August 1 was 82.9, as compared with 85.1 a month earlier.

The average condition of potatoes on August 1 was 87.2, as compared with 88.1 a month earlier, 94.8 in 1902, 62.3 at the same date in 1901, and a ten-year average of 84.5.

Preliminary returns indicate an increase of 0.3 per cent in the hay acreage. The condition of timothy hay on August 1 was 92.2, as compared with 90 in 1902, 84.1 in 1901, and a nine-year average of 84.7.

Reports as to the production of clover indicate that nearly a full crop will be harvested. In point of quality the crop of clover is well up to high medium grade.

The condition of rice on August 1 was 92, as compared with 93.5 a month earlier.

The average condition of cotton on July 25 was 79.7, as compared with 77.1 on June 25, 1903, 81.9 on July 25, 1902, 77.2 on July 25, 1901, and a ten-year average of 84.3.

In Massachusetts the average condition of corn was 67; the average condition of oats 97, and the proportion of the crop of 1902 still in farmers' hands 4.1 per cent; the average condition of spring rye 98; the acreage of buckwheat compared with last year 96, and the average condition 93; the average condition of tobacco, 84; the average condition of potatoes, 85; the acreage of hay compared with last year, 99; the average condition of timothy, 92; the production of clover, 93; the quality of clover, 95; the average condition of pasture, 96; the average condition of apples, 66; the average condition of peaches, 24; and the average condition of grapes, 81.

TEMPERATURE AND RAINFALL FOR THE WHOLE COUNTRY.

[FROM UNITED STATES CLIMATE AND CROP BULLETINS.]

Week ending July 27. — In the southern States and in the northern districts eastward of the Mississippi River the week averaged nearly normal in temperature. In the Missouri valley and Rocky Mountain region the week averaged warmer than usual. On the Pacific coast and over the western portion of the Plateau districts the week was cooler than usual, being decidedly cool on the central portion of California. There was more than the average rainfall over the greater part of New England, in portions of the lower Lake region, middle Atlantic and Gulf States, over a limited area in the upper Ohio valley, and in portions of the upper Mississippi and upper Missouri valleys; but over the greater part of the country the rainfall was lighter than usual.

Week ending August 3. — The week was cooler than usual in the west Gulf States, throughout the northern portions of the country from the Atlantic to the Pacific, and in southern California. It was decidedly cool in New England, the Lake region, upper Mississippi and Missouri valleys, and northern Rocky Mountain districts. In the southern Rocky Mountain districts and in the east Gulf and south Atlantic States the week averaged warmer than usual. Over the greater part of the country east of the Rocky Mountains the rainfall exceeded the average, and was excessively heavy from the west Gulf coast northward to the upper Mississippi and central Missouri valleys, and also over portions of the Lake region, Ohio valley and south Atlantic and east Gulf States. Over the greater part of the middle Atlantic States and New England the rainfall was below the average.

Week ending August 10. — The week averaged cooler than usual in the northern districts eastward of the Rocky Mountains, over portions of the Plateau region, along the immediate Pacific coast and in southern Texas. It was decidedly cool in New England and in portions of the middle Atlantic States, and in the Lake region, upper Mississippi, Red River of the North and upper Missouri valleys, the

deficiency being most marked in New England. In the southern States the week averaged slightly warmer than usual. The rainfall exceeded the average in southern New England, the northern portion of the middle Atlantic States, the greater part of the Lake region, upper Mississippi, lower Ohio and lower Missouri valleys. Over the interior portions of the south Atlantic and east Gulf States, in the upper Ohio valley, northern New England, and generally along the middle and south Atlantic coasts there was less than the average rainfall.

Week ending August 17. — The week was cooler than usual in the northern districts east of the Rocky Mountains, and also over the western portion of the middle Plateau region, the greater part of California and on the north Pacific coast. In New England, the Lake region and upper Mississippi valley the maximum temperatures were generally below 80°. Generally throughout the Rocky Mountain districts and the southern States the temperature averaged normal or slightly above. In the lower Missouri valley, portions of the upper and lower Mississippi valley and upper Lake region, and in the middle and south Atlantic States the rainfall exceeded the average, being excessively heavy in the central Missouri valley, central and lower Mississippi valley and along the south Atlantic coast. Over the greater part of New England, the lower Lake region, upper Ohio valley, portions of the upper Lake region and upper Mississippi valley, and over the greater part of Texas, the rainfall was below the average.

Week ending August 24. — The week was slightly cooler than usual in the Atlantic coast districts from Florida to southern New Jersey and on the central New England coast. In the western portion of the upper Lake region, the upper Mississippi and upper Missouri valleys, and generally throughout the Rocky Mountain and Plateau regions, the week was warmer than the average. Elsewhere the temperature averaged nearly normal, although slightly in excess at most stations. Over a considerable portion of the Gulf States the rainfall exceeded the average. There was also more than the weekly average on the central New England

coast, in northern Minnesota, North Dakota, portions of Montana, South Dakota, Wyoming, Colorado and Utah, and along the immediate north Pacific coast. In the central valleys and over the greater part of the Lake region and New England, the middle Atlantic States and the greater part of Texas the rainfall was below the average.

SPECIAL TELEGRAPHIC REPORTS.

[WEATHER BUREAU, BOSTON.]

Week ending July 27. — New England. Boston: Week rather too wet and cold for best growth, but potatoes and garden vegetables have done well; corn made good growth, but needs sunshine; grain and grass somewhat damaged by wind and rain; good crop of rye: haying delayed by rain, nearly an average crop; good yield of rowen promised; apples uneven, probably below average: berries fairly plenty; tobacco mostly doing well, some damage by rain, topping begun.

Week ending August 3. — New England. Boston: Average week for growth, but most crops need sunshine: haying delayed by showers and cloudiness; corn making good growth, and is promising, but backward; oats, rye and barley good; some apples blown off by high winds, otherwise condition unchanged; pears and plums uneven, latter somewhat damaged by blight: garden vegetables good, and growing well; tobacco fair; potatoes excellent.

Week ending August 10. — New England. Boston: Cloudiness and rain generally unfavorable for growth and harvesting: much grass, oats, rye and barley yet to cut, with prospects for good crops; potatoes growing well, and promising good yield: corn and tobacco making fair advance, much in need of sunshine and warmth: apples and other fruit prospects unchanged; garden vegetables in fair condition; vine crops late, but growing well.

Week ending August 17. — New England. Boston: Week generally favorable for growth and harvesting crops, but more sunshine and warmth needed: considerable hay yet to be cut: yield and quality of hay, oats, rye and barley good; potatoes thriving, and promise good crop: garden

truck backward, especially melons, cucumbers and tomatoes; yield of winter apples will be small, quality excellent, especially Baldwins; tobacco making fair growth, cutting begun, needs sunshine.

Week ending August 24. — New England. Boston: Week generally favorable; some grain lodged; apples blown off; garden vegetables made good growth, but are backward; small yield of vine crops expected; potatoes generally in good condition, some scattered blight and rot, especially in Connecticut; corn crop small; hay average crop, much to be cut; rye, barley and oats giving excellent yields; cranberry harvest begun, yield below average, quality excellent; tobacco uneven, cutting begun.

WEATHER OF AUGUST, 1903.

The weather of the first three days of the month was generally clear and favorable for farm work, although the temperature was somewhat cool: then followed nearly a week of cloudy, rainy weather, extending from the 4th to the 9th inclusive. The rainfall was well distributed and quite heavy, 1 inch or more falling in nearly all parts of the State. The temperature continued low, both during the days and nights, probably breaking any previous record of low average temperature for the week ending August 10. At Boston the average temperature for the week was only 60°, which was 7° lower than the lowest previously recorded for this period, and 12° below the average of this period for thirty years, which is 72°. After the 9th fair weather prevailed for nearly a week, with more than the average amount of sunshine. The temperature also ranged somewhat higher, although continuing below the normal for the season, with cool nights. With the exception of light local showers on the 16th and 17th, generally clear weather prevailed from the 10th to the 19th. Local showers again occurred on the 20th, and were general with copious rainfall on the 25th. After the 19th there was more cloudiness with deficiency of sunshine, which conditions continued through the greater portion of the remainder of the month. The temperature ranged higher from the 19th to the 23d

than during any preceding portion of the month, rising to maxima of 80° to 86° , and was generally normal; at Boston this was the only portion of the month when the temperature rose to the normal. This warm, seasonable temperature was of brief duration, for on the 25th cloudy, threatening weather, with unseasonably low temperatures and cool northerly to easterly winds, again set in, continuing up to nearly the last of the month. While the precipitation for the month was somewhat below normal, it was quite well distributed and without marked feature. The feature of the month, however, which made it an exception to nearly all other Augusts, was the abnormally low temperature. The nights were continuously cool, and warm, summerlike days were few; at Boston there were but three days when the temperature rose to 80° or higher. While the quantity of rainfall and sunshine was not such as to be unfavorable, the extreme low temperature made the weather conditions of the month unsuitable for the growth of many crops.

In the circular to correspondents returnable August 24 the following questions were asked:—

1. What is the condition of Indian corn?
2. What is the prospect for rowen, as compared with a normal crop?
3. What is the prospect for late potatoes, and have you noticed blight or rot?
4. How do the acreage and condition of tobacco compare with former years?
5. What is the prospect for apples, pears, peaches, grapes and cranberries?
6. What is the condition of pasturage?
7. How have oats and barley compared with former years?
8. What proportion of your farmers give poultry the care it should have for good results?

Returns were received from 168 correspondents, from which the following summary has been made up:—

INDIAN CORN.

Reports on Indian corn were almost universally discouraging, and almost a total failure of the crop is looked for, so far as the maturing of the grain is concerned. Should September be unusually warm, with warm nights, — in fact, should summer weather prevail during the month, — corn might improve so that a fair crop could be secured, but such a result is not to be expected. It is generally reported that the ears are not numerous or well developed, although as stover the crop will approach more nearly to the normal. Corn planted for the silo is also late and immature at present.

ROWEN.

The rowen crop is unusually heavy on early cut fields, and good on many of those later cut; but so many fields were cut very late, and will consequently produce little rowen, that not more than an average crop will be secured as a whole. The frequent rains have put mowings in excellent condition. Many correspondents report the belated first crop to have been the heaviest for years.

LATE POTATOES.

Late potatoes are somewhat backward, and but few had been harvested at the time of making returns. A fair to good crop was promised at that time, although blight had appeared generally throughout the State, and there were some reports of rot. Should these diseases become prevalent and severe, only a small crop can be looked for; but further returns must be received before the comparative yield can be stated with any degree of accuracy.

TOBACCO.

The acreage of tobacco is about the same as last year. The crop is late, and generally in poor condition. Some good fields are reported, but the majority show a light yield, and some are turning yellow. Cutting is in progress, but is somewhat delayed by the backwardness of the crop, and will not be completed before the first week in September.

FRUITS.

Apples are holding on well, and promise an unusually good crop for an off year, as it is in most localities. The quality of the fruit promises to be good. Pears are a fair crop, of good quality. There will be practically no peaches, except in a few favored localities. Grapes promise a fair crop, though hardly an average one. Cranberries are a light crop in all sections, owing to the late spring frosts.

PASTURAGE.

Pastures are generally in first-class condition, much better than is usual at this time of year, although at the time of making returns rains were needed on the Cape to enable them to carry through the season.

OATS AND BARLEY.

Oats are a fair average crop, reports of unusually good crops being about balanced by adverse ones from other sections. Barley is but little raised, except for forage. Both have done well in this latter capacity.

POULTRY KEEPING.

It is the general opinion of the correspondents that but few farmers give poultry the care it should have for good results, but they also appear to believe that even under present conditions it is generally a profitable branch of farming. Attention is called to the article at the end of the bulletin, which elaborates plans for keeping poultry on farms with a minimum of labor, — an important item with all farmers.

NOTES OF CORRESPONDENTS.

(Returned to us August 24.)

BERKSHIRE COUNTY.

Mount Washington (H. M. WEAVER). — Indian corn is very backward. Rowen promises to be a better crop than usual. Potatoes are a good crop, with neither blight nor rot as yet. Apples are a better crop than for six years past; pears good. Pastures are in good condition. Oats and barley are good in straw, but light in grain, especially oats. None of our farmers give poultry the care it should have for good results.

New Marlborough (E. W. RHOADES). — Corn is very late and uneven. Rowen promises to be a full normal crop. Late potatoes promise a fair crop, with blight and rot in places. There will be a half crop of apples; pears, peaches and grapes very small crops. Pasturage is in good condition. Oats are an average crop. Possibly one-fourth of our farmers give poultry the care it should have for good results.

Otis (S. H. NORTON). — Indian corn is very backward. Rowen is looking well. Potatoes will be a good crop, though there is some complaint of rot. There will be a very good crop of apples. Pastures are in good condition. Oats are about an average crop. Very few farmers give much attention to poultry.

West Stockbridge (J. S. MOORE). — Corn is in poor condition, and most of it will only be fit for use in the silo. Rowen will be the best crop in years. The prospect for late potatoes is good, with but little complaint of blight or rot. Apples and pears are average crops; other fruits not raised. There is a good crop of oats; little barley sown. Very few of our farmers give poultry the attention it should have for good results, but those who do, find that it pays. The hay crop is generally considered to have been much larger than last year.

Richmond (T. B. SALMON). — Indian corn is very backward, and there will be little grain to harvest. Rowen is about a normal crop. The prospect is that there will be a good crop of potatoes. Apples will give a good crop; few pears or peaches; no grapes or cranberries. Pasturage is in good condition. Oats

are a good crop and barley is above the average. Only about half our farmers give poultry the care it should have for good results.

Washington (E. H. EAMES). — Indian corn is not as good as usual but is better than last year. The prospect is good for the rowen crop. Late potatoes are a good crop, though blight and rot have done some damage. Apples and pears are good crops. Pasturage was never in better condition than at present. Oats are a heavy crop. Not much attention is paid to poultry for other than home uses.

Dalton (WESLEY B. BARTON). — Corn is about half a crop. Rowen will not be more than a third of a normal crop. Potatoes made a good yield, but are rotting badly. There will be half a crop of apples and pears. Pastures are in good condition. Oats and barley are full crops. Perhaps 10 per cent of our farmers give poultry the attention it should have for good results. The early drought held everything back so as to delay work, and when the rush came help was scarce.

Windsor (H. A. FORD). — There is little prospect of Indian corn maturing any grain. Rowen never looked better. Potatoes have nearly all blighted, and are rotting. Apples look quite well. Pasturage was never in better condition at this time of year. Oats and barley never gave better crops. Three-fourths of our farmers give poultry the attention it should have for good results.

Williamstown (S. A. HICKOX). — Indian corn promises to give but little over half a crop. Rowen will be nearly a normal crop. Blight and rot have appeared on potatoes. Apples are a good crop; other fruits light. Pasturage is in good condition. Oats and barley have compared well with former years. About a tenth of our farmers give poultry the attention it should have for good results.

FRANKLIN COUNTY.

Hawley (C. C. FULLER). — Indian corn is light and backward. Hay was cut late, so rowen is below a normal crop. Late potatoes were looking well, but blight has struck them this week. Fruit is scarce. Pastures are above the normal in condition. Oats and barley are average crop. About half our farmers give poultry the attention it should receive for good results.

Leyden (U. T. DARLING). — Corn is very small for the time of year, and but a small portion of it will mature. An average crop of rowen will be secured. Potatoes are looking well, although blight has struck some fields. There will be a small crop of apples and pears; no peaches or grapes. Pasturage is in good condition. Oats and barley are better than average crops. A very small por-

tion of our farmers give poultry the attention it should have for good results.

Shelburne (GEO. E. TAYLOR). — Indian corn is three weeks late, and will not give over half a crop. Rowen never promised better than now. Prospect good for late potatoes, but have noticed some blight and rot. Apples will not be more than one-fourth of a crop. Pasturage is fresh and plenty. Only a very few do the best they might with poultry.

Whately (FRANK DICKINSON). — Indian corn is late and poor. The prospect for the rowen crop is good. Late potatoes are a good crop, and neither blight nor rot has appeared. Acreage of tobacco average; condition below normal. Apples are about half a crop of good quality. Pastures are in good condition. Oats are a fair crop. Not more than one in twenty of our farmers give poultry the attention it should have for good results.

Leverett (W. L. BOUTWELL). — Corn is in poor condition. Those who cut their hay early have a good crop of rowen. The prospect for late potatoes is poor, and I have noticed blight. Tobacco is in poor condition. The prospect is not good for fruit of all kinds. Pasturage is in excellent condition. Oats and barley have given better crops than usual. Very few of our farmers give poultry the attention it should have for good results.

Montague (C. S. RAYMOND). — The growth of fodder on Indian corn is fair, but unless frost holds off the grain will be a poor crop. Rowen promises better than an average crop. Potatoes will not give over 80 per cent of a crop; blight heavy, but no rot as yet. Acreage of tobacco about as usual, but condition poor. There will be very little fruit of any kind. Pasturage is in very good condition so far, but will soon fail unless we have rain. Oats and barley are about three-fourths crops. About 15 per cent of our farmers give poultry the care it should have for good results.

Northfield (T. R. CALLENDER). — Corn is very late, and the season must be a long one to perfect the crop. Rowen is fully up to the average. Potatoes are looking well, with little blight or rot. Acreage of tobacco about the same as usual, with growth small. Apples uneven, but probably an average crop. Pasturage is better than usual at this season. Oats and barley are above average crops. Less than 5 per cent of our farmers give poultry the attention it should have for good results. The hay crop proved to be fully up to the average. Cucumbers for pickling are a partial failure.

Erving (C. F. CLARK). — Indian corn is in very poor condition. The prospect for the rowen crop is fair. Potatoes are a fair crop,

with some blight. There will be a medium crop of apples, pears and grapes. Pasturage is in very good condition. Oats and barley compare favorably with former years. Not more than half of our farmers give poultry the attention it should have for good results.

Orange (A. C. WHITE). — Indian corn is in very poor condition. Rowen promises to be a good crop. Potatoes have blighted, and will give but a small yield. This is an off year for all kinds of fruit. Pasturage is in normal condition. Oats and barley compare well in yield with former years. Very few of our farmers, perhaps 5 per cent, give poultry the care it should have for good results.

HAMPSHIRE COUNTY.

Prescott (W. F. WENDERMUTH). — Corn is very late, and not maturing well; there is some rust, and much of the crop will not mature unless frost holds off very late. The rowen crop will be better than normal. The prospect for late potatoes is good, with not much blight or rot as yet. Apples are very nearly an average off-year crop; pears normal; grapes good; no peaches or cranberries. Pastures are in extra good condition for the time of year. Oats and barley are rather better crops than usual. About one-fourth of our farmers give poultry the attention it should have for good results.

Belchertown (H. C. WEST). — Indian corn is growing fast on some good fields, but as a whole is not over a three-fourths crop. There will be a full average crop of rowen. Potatoes are more than an average crop, with very little blight noticed. Apples fair; no peaches; few pears; grapes fair. Pasturage is in fairly good condition for the season. Oats are more than an average crop; barley fair crop. Not over 10 per cent of our farmers give poultry the care it should have for good results.

Hadley (H. C. RUSSELL). — Corn is very late and of small growth, and it is doubtful if the grain will mature to be worth much. Rowen is excellent where the first crop was cut early. Late potatoes are looking well; blight has appeared on some fields, but is not general. Tobacco is improving very fast of late, and the prospect is good for a fair crop, but not up to the average. Fruit is very limited in quantity and quality. Pasturage is good, and grain promises well.

Granby (GEO. A. BLISH). — Indian corn is very backward. Rowen promises to be an extra good crop. Potatoes are a fair average crop, with little blight. Fruit of all kinds is scarce.

Pasturage is fully up to the average in condition. Oats and barley are normal crops. A very small proportion of our farmers give poultry the attention it should have for good results.

Hatfield (THADDEUS GRAVES). — Indian corn is about half a crop. Rowen will be above an average crop. Potatoes promise about a normal yield; a little of both blight and rot has been noticed, but not as much as usual. There are some good crops of tobacco, but most fields are faded and spindling; possibly a two-thirds crop, as a whole. Pastures are in good condition. Oats and barley are little raised. Nearly all farmers, including myself, neglect and abuse poultry.

Eusthampton (WM. E. CLAPP). — There are some good fields of corn, but for the most part it is very backward. There will be more than a normal crop of rowen. There is a good crop of potatoes, with not much blight. Acreage of tobacco about the same as usual, and the crop looks well. Apples scarce; also peaches; grapes plenty. Pasturage is in very good condition. Oats are a good crop. A large proportion of our farmers give poultry the care it should have for good results.

Westhampton (H. A. PARSONS). — Indian corn is in very poor condition, and will not yield over half a crop. Rowen is a full normal crop. Blight and rot will damage potatoes grown on low ground. The acreage of tobacco is about the same as usual, and the crop looks well. No peaches; half a crop of apples; not many pears. Pastures are in good condition. There is no barley, and oats will be a light crop. Not over half of our farmers give poultry the attention it should have for good results.

Williamsburg (F. C. RICHARDS). — Corn never was poorer, and there has been no development, it being all stalks with no ears to ripen. Rowen will be far above an average crop. Late potatoes have blighted badly. The acreage of tobacco is smaller than usual, and the crop is in poor condition. Apples a one-third crop; pears a one-fourth crop; no peaches. Pasturage is in the very best condition. Oats and barley are full average crops. None of our farmers give poultry the care it should have for good results.

Chesterfield (HORATIO BISBEE). — Locally Indian corn is about a failure. Rowen is looking well. The potato crop is very uneven; there is some blight and rot, and some fields will yield well, while others will not. There are some apples; think the crop a fair one for the odd year. Feed is very good in pastures, and stock is doing well. Oats and barley are good crops. A very small proportion only of our farmers give poultry the care it should have for good results.

HAMPDEN COUNTY.

Blandford (E. W. BOISE). — Corn is a poor crop, almost a total failure. The prospect for rowen is good, and there should be fully 25 per cent more secured than usual. Potatoes are a full normal crop, with no blight or rot. Apples and pears are above the normal for the off year. Pasturage is in extra good condition. Oats and barley are about 90 per cent of normal crops. Very few of our farmers, perhaps 10 per cent, give poultry the care it should have for good results. Much hay yet remains to be cut, and it is more like rowen than hay and requires much time to cure.

Tolland (E. M. MOORE). — Indian corn is very poor and late. Rowen will be a good average crop. Potatoes have blighted, and are rotting somewhat. The apple crop will be a light one; some pears; no grapes; quite a good crop of cranberries. Feed is getting short in pastures. A very small proportion of our farmers give poultry the attention it should have for good results.

Southwick (L. A. FOWLER). — Indian corn is backward. Rowen is a better crop than the usual average. Late potatoes are not as good as the early crop, and in many cases will yield poor returns. Acreage of tobacco about the same as usual, and condition below normal, but much better than that in the near-by towns. There is very little fruit of any kind. Pasturage is in good condition. Oats and barley compare favorably with former years. The proportion of our farmers who give poultry the care it should have for good results is less than 5 per cent.

West Springfield (J. N. BAGG). — Corn is in good condition, and is a rank crop on good land. Rowen will be better than a normal crop. The prospect is good for late potatoes, with no blight or rot and few potato bugs. The acreage of tobacco is less than usual. Apples and peaches light; pears and grapes good. Pastures are in good condition. Oats and barley have been fair crops for forage; none grown for grain. But a small proportion of our farmers give poultry the care it should have for good results.

Ludlow (C. B. BENNETT). — Indian corn is in very poor condition. The prospect for the rowen crop is good. Potatoes will give a fair crop, if they do not rot. There will be no fruit of any kind. Pastures are in good condition. Oats and barley are about normal crops. About half our farmers give poultry the attention it should have for good results. A large hay crop has been gathered, in first-class shape.

Wilbraham (H. M. BLISS). — Indian corn is backward, and will be a very light crop. Rowen will be nearly a normal crop. The

prospect is good for late potatoes, and no blight or rot has appeared. Apples are a little better than half a crop; pears 10 per cent; no peaches; grapes nearly a full crop; cranberries nearly half a crop. Pasturage is in good condition. Oats and barley are good crops. One-tenth of our farmers give poultry the attention it should have for good results.

Hampden (J. N. ISHAM). — Corn is about ten days late, but has been doing well for the past two weeks. Rowen is late on many fields, and will be less than a full crop. Potatoes have been growing finely, and show neither blight nor rot. Winter apples are a light crop; fall apples plenty; pears and grapes fair. Pastures are holding out well, although now in need of rain. Oats are a good crop, but are mostly cut green. Interest in poultry has increased rapidly of late, and comparatively few neglect poultry; the profit in the business brings increased care.

Wales (G. S. ROGERS). — Indian corn is in very poor condition. There will be a light crop of rowen, owing to the first crop being cut so late. Late potatoes are good, with no blight or rot to be seen. Apples are a fair crop for the odd year. Pastures are in very good condition. Oats and barley have been fairly good crops. Very few farmers take the proper care of poultry for good results.

Palmer (O. P. ALLEN). — Corn is very backward, and will be a light crop. The prospect for the rowen crop is not as good as usual. Potatoes promise well, and have not noticed blight. There will be a very light crop of fruit. Pasturage is not in as good condition as usual. Oats and barley are not up to average crops. Only a small percentage of our farmers give poultry the care it should have for good results.

WORCESTER COUNTY.

Warren (W. E. PATRICK). — The condition of Indian corn is very poor, and it is doubtful if any of it will mature sufficiently to harvest. The prospect for rowen is good, but hardly up to the average. The prospect is good for late potatoes; there are some cases of blight, but less than usual. There is a fair crop of apples for the off year; few pears; no peaches. Pasturage is in better condition than usual at this season of the year. Oats are better than for several years. The proportion of our farmers who give poultry the care needed for good results is too small to estimate.

Spencer (H. H. KINGSBURY). — Corn is in an unsatisfactory condition, with a slim prospect for any maturing. The indications are favorable for a full crop of rowen. No blight or rot has been seen thus far on potatoes, and there is prospect of a good

crop. There will be a fair crop of apples ; few pears ; no peaches or grapes. Pasturage is in good shape. There is a large oat crop, which has been harvested as fodder. But few give poultry the proper care to get the best results.

Oakham (JESSE ALLEN). — Indian corn is in very poor condition. The prospect is that there will be about a two-thirds crop of rowen. The prospect for late potatoes is good, and there is no blight or rot as yet. There will be a one-third crop of apples, few pears and grapes, and no peaches. Pastures are in excellent condition. Oats and barley are fine crops. The proportion of our farmers who give poultry the care it should have for good results is about one-third.

Hubbardston (C. C. COLBY). — Corn is very backward, and the prospect is for from about 60 to 70 per cent of the normal crop. Rowen is looking well, and will be above the average. Early potatoes were nearly a failure, but the late planted will be a good crop. Only a few orchards will have any apples, and those only a light yield. Pasturage has been excellent this season, and is in good condition at this time. Oats and other grains have made a good growth, quite a little above the average. Only a few of our farmers keep poultry for other than home consumption.

Phillipston (A. D. CLIFFORD). — Indian corn is in the worst condition I have ever known at this time of year. Rowen is better than usual. I have not noticed any blight on potatoes as yet. There will be no peaches, and very few apples or other fruits. Pastures are in good condition. Oats and barley are usually raised for hay here, and are an average crop. Probably not a third of our farmers give poultry the care it should have for good results.

Templeton (LUCIEN GOVE). — Corn is very late, and under the most favorable conditions only a small portion of the crop will mature. On early cut fields the outlook for rowen is quite promising, for clover especially. There is some complaint of blight on potatoes, and the crop will not be heavy. Apples and pears light ; no peaches ; grapes light. Pasturage is in good condition for the time of year. Oats and barley are fair average crops, nothing more. Possibly 25 per cent of our farmers give poultry the care it should have for good results and the industry is growing.

Ashburnham (E. D. GIBSON). — Field and sweet corn is just beginning to silk, and ensilage corn is very backward. Hay was cut too late to allow rowen to grow. There are no home-grown potatoes in the market, and a light yield is anticipated. Apples light ; pears very light ; no peaches ; cranberries fair. Pastures are in good condition. Oats and barley are light crops for grain.

Not a third of our farmers give poultry the care it should have for good results.

Bolton (H. F. HAYNES). — Indian corn is in very poor condition. Rowen will be a full normal crop. Late potatoes will be a small crop; blight has appeared on some fields; no rot as yet. There are very few apples and no cranberries or peaches. Pastures are in good condition. Oats and barley were all cut for hay, and were rather light crops. Very few if any of our farmers give poultry the care it should have for good results. The hay crop is the heaviest for years.

Holden (G. S. GRAHAM). — Corn is about half a crop, but looks better than earlier in the season. The prospect for the rowen crop is very good. The prospect for potatoes is not as good as usual, and blight has appeared. Apples seem to be plenty; no peaches or grapes. Pasturage is in as good condition as usual for the time of year. Oats and barley are better crops than for the last two years. Only a small proportion of our farmers give poultry the care it should have for good results.

Northborough (J. K. MILLS). — Corn is very uneven, and it looks as though there would be a small crop. There will be a good crop of rowen. There will not be a large crop of potatoes, and there is some blight and rot. There will be a fair crop of apples, pears and grapes, but no peaches. Pastures have been very good and are holding out well. There was a good crop of oats. Ninety per cent of our farmers give poultry the care it should have for good results.

Southborough (E. F. COLLINS). — Indian corn is very late, but early fields are caring out well. There will be more than an average crop of rowen. Early potatoes are a good crop, but show blight somewhat. Apples are a good crop; more Baldwins than last year. Pasturage is in the best condition for years. About half of our farmers give poultry the care it should have for good results.

Auburn (WM. GILBERT). — Indian corn is very light, but is growing very rapidly now. Rowen is a good crop, far above the average. Late potatoes yield well; some blight and rot. Apples, pears and grapes are fair crops. Pastures were never better at this time of year, but are getting short now. Oats and barley are about 80 per cent of average crops. About half our farmers give poultry the care it should have for good results.

Sutton (C. P. KING). — Indian corn is poor and very backward. Rowen is starting well, except on some newly seeded fields. Late potatoes are a good crop, with no rot as yet. Apples fair; no peaches; cranberries good. Pasturage is good and green. Oats

are a heavy crop. Two in a hundred of our farmers give poultry the care it should have for best results. *

Hopedale (DELANO PATRICK). — Corn was never more backward. Rowen is a very good crop, better than usual. Potatoes are a good crop, and no blight or rot are apparent. There will be but few apples and pears; no peaches; grapes less than average. Pastures are in much better than average condition. Not one-tenth of our farmers give poultry the care it should have for good results.

Blackstone (O. F. FULLER). — Indian corn is backward. There will be a good crop of rowen. Potatoes are showing some signs of rot. There will be a very small crop of fruit here. Pasturage is in fair condition. Oats and barley have compared favorably with former years. Very few of our farmers give poultry the care it should have for good results.

MIDDLESEX COUNTY.

Hopkinton (W. V. THOMPSON). — Indian corn is three weeks late, and not up to the average in appearance. The prospect is good for the rowen crop. The prospect for late potatoes is fairly good, with no sign of blight or rot. This being the off year, apples are a poor crop; pears fairly good; no peaches; grapes half a crop. Pasturage is in good condition for the time of year. Poultry is made a specialty by most of those giving it attention in this vicinity.

Sherborn (N. B. DOUGLAS). — Corn is in very poor condition. Rowen will be more than an average crop. Potatoes are looking extremely well, with no rot or blight. Apples are half a crop; pears 40 per cent; no peaches. Pastures are in better condition than usual. Oats and barley are raised as forage crops, and yielded heavily. One in ten of our farmers gives poultry the care it should have for good results.

Sudbury (E. W. GOODNOW). — Indian corn is looking well, but is backward. The prospect for rowen is favorable. Late potatoes are looking fairly well, but show blight. Fruit of all kinds is poor and scarce. Pasturage is looking well. Oats and barley are above the average, compared with former years. Very few farmers give poultry the care they should for good results.

Maynard (L. H. MAYNARD). — Indian corn is in very poor condition, and it is doubtful if any of the crop matures, owing to cold, wet weather. Rowen will be above an average crop. Late potatoes promise well, with no blight or rot as yet. Apples are half a crop, and very poor in quality; pears about half a crop; no peaches;

grapes half a crop. Pastures look well, owing to cold, wet weather. Oats were extra good, also barley, but were cut for fodder. Nearly every farmer keeps a few hens, but we have no specialists in this line.

Littleton (GEO. W. SANDERSON). — Indian corn is backward, but has gained rapidly for the last twelve days, which also applies to corn for the silo. Rowen is more than an average crop. Potatoes are a good crop, and no blight has been noticed. There is a fair crop of early apples and a light crop of winter apples; few pears, grapes and cranberries. Pasturage is in excellent condition. There is a fair crop of oats and barley. Not one in a hundred of our farmers gives poultry the care it should have for good results.

Groton (JAS. P. FITCH). — If frosts hold off, corn may have a chance to ripen. Late haying will make the rowen crop light. No blight or rot on potatoes as yet. There will be some Baldwin apples; no peaches, grapes or cranberries. Pasturage is in good condition. Oats and barley are fair crops. Perhaps 1 per cent of our farmers give poultry the care it should have for good results.

Townsend (G. A. WILDER). — Indian corn is in poor condition. Rowen will be more than an average crop. Potatoes are a poor crop, and are showing signs of rot. The prospect is very poor for all kinds of fruit. Pastures are in good condition. Oats and barley are about normal crops. One-fourth of our farmers give poultry the attention it should have for good results.

Chelmsford (P. P. PERHAM). — Corn is late, and in danger of frost. The prospect is good for a good average crop of rowen. Potatoes promise a light crop, and some blight is in sight. Apples are in abundance in this vicinity; peach crop a failure; pears and grapes good average crops. Pastures look finely. Oats and barley promise well. The proportion of farmers who give proper care to poultry is very small, less than one-half.

Carlisle (E. J. CARR). — Corn is in very poor condition, and will not ear out to amount to anything. Rowen will be more than a normal crop. Late potatoes are a good crop; some blight, but no rot. Apples and pears few; no peaches or cranberries; some grapes. Pasturage is in more than average condition. About one-tenth of our farmers give poultry the care it should have for good results.

Tewksbury (G. E. CROSBY). — Indian corn is not in very good condition, but I am not prepared to say it is a failure, as yet. Rowen promises to be better than an average crop. The prospect for late potatoes is good, and there is very little indication of blight. Apples as a whole are not over one-fourth of a crop;

some pears ; no peaches. Pastures are in good condition for the time of year. Oats and barley are not grown for grain, but were good as forage crops. Not one-tenth of our farmers give poultry the care it should have for good results. Tomatoes are one of the crops that came near being a failure ; but if the weather continues to be as favorable as for a few days past, they may turn out better than anticipated.

Winchester (S. S. SYMMES). — The rowen crop will be heavy in most places. Potatoes are unusually thrifty and good. There will be a light crop of apples, a good crop of pears, and no peaches or grapes. Pasturage is in very good condition. Oats and barley are not raised. Very few of our farmers keep any poultry. Tomatoes and squashes are very backward, and it is doubtful if squashes make a crop. Celery is also unusually backward.

Wakefield (CHAS. TALBOT). — Corn is a fair to good crop, but will be somewhat later than usual. Rowen is 20 per cent better than for years. Late potatoes are fully up to the average, and blight has not appeared as yet. Apples very few ; pears plenty ; grapes normal ; cranberries a very light crop. Pastures were never in better condition. Oats are looking well, except a few fields which show some rust. Not over 5 per cent of our farmers give poultry the care it should have for good results.

ESSEX COUNTY.

Haverhill (EBEN WEBSTER). — Indian corn is smaller and later than usual, and the prospect is not encouraging. A good crop of rowen is expected. The prospect is that late potatoes will be a better crop than early ones ; no blight or rot. Apples will be a one-third crop ; few pears and grapes ; no peaches. Pasturage is in very good condition. About one-third of our farmers give poultry the care it should have for good results.

Andover (M. H. GOULD). — Corn has a poor stand, and is very backward. Rowen is much above an average crop. Blight and rot have appeared somewhat on late potatoes. Apples poor ; no pears or peaches ; some grapes ; cranberries a two-thirds crop. Pastures are in very good condition. Oats and barley are very little raised. About 20 per cent of our farmers give poultry the care it should have for good results.

Rowley (D. H. O'BRIEN). — Indian corn is in very poor condition. The prospect is very good for rowen. Potatoes are backward and blighting. Apples and pears are a small crop, and other fruits are almost total failures. Pasturage is in good condition. Oats and barley are about average crops. About half

our farmers give poultry the care it should have for good results.

Topsfield (B. P. PIKE). — Not over 10 per cent of a crop of corn is promised, and if we should have an early frost there would not be any sound corn. Rowen will be an average crop, but will be late. Late potatoes will be a poor crop, with some blight. Apples are not over a quarter of a crop; pears a small crop; no peaches, grapes or cranberries. Pastures are in good condition. Oats and barley are not raised for grain. Half our farmers give poultry the care it should have for good results.

Wenham (N. P. PERKINS). — Not much corn is raised except for the silo. There is prospect of a fair crop of rowen on early planted fields, but many fields were mowed rather late. Potatoes are rather small, but have quite a number in the hill; not much rot has been noticed. Apples are a larger crop than usual for an off year; pears are a fair crop, and of good size; no peaches, grapes or cranberries. Pasturage has been quite good, but has grown rather short now. Not more than one-fourth of our farmers give poultry the care it should have for good results. Squashes are very small and backward, also late cabbages and carrots. A late fall will be a great help to all crops.

Manchester (JOHN BAKER). — Indian corn is in poor condition, and this is not a corn year. Rowen will be better than a normal crop. Late potatoes are a good crop, with no blight or rot. Pears fair; no peaches; few apples or grapes. Pastures are in excellent condition. Oats and barley are good crops, better than usual. Very little care is given to poultry.

NORFOLK COUNTY.

Randolph (R. A. THAYER). — Indian corn is two weeks late, and does not promise a full crop. Rowen looks like a good average crop. Late potatoes look well, and no blight has appeared as yet. Apples are a small crop; pears good; peaches none; grapes poor. Pasturage is in excellent condition for the season. Oats and barley were used for forage, and made good average crops. Very few farmers pay much attention to poultry.

Canton (E. V. KINSLEY). — Corn is very backward. Rowen will be above an average crop. Late potatoes look well, with no blight to date. Apples are a light crop; pears heavy; other fruits light. Pasturage is in good condition for the time of year. Oats and barley are average crops. None of our farmers give poultry the care it should have for good results. Dairy cows have done well, and the supply of milk is ample.

Norwood (F. A. FALES). — Indian corn is thirty days late. Rowen will be a good crop. Potato vines are looking well, and do not show blight as yet. There will be a very small crop of apples, and fair crops of pears, grapes and cranberries. Pastures are in first-rate condition. Oats and barley are about three-fourths crops. About a fourth of our farmers give poultry the attention it should have for good results.

Walpole (E. L. SHEPARD). — Indian corn is backward. Hay-ing coming so late, rowen is a small crop, but looks well for fall feed. Potatoes look well, and no blight or rot has been noticed. Apples, pears and grapes are half crops; no peaches; few cranberries. Pastures are looking well. Oats and barley are average crops. Perhaps 15 per cent of our farmers give poultry the care it should have for good results.

Millis (E. F. RICHARDSON). — Corn is very backward. Rowen will be better than an average crop. Blight has appeared on late potatoes. There will be no cranberries, and other fruits will be rather short, except pears. Pasturage is in good condition. Oats and barley are good crops. Half our farmers give poultry the care it should have for good results.

Franklin (C. M. ALLEN). — Corn will not be an average crop. Rowen will be more than an average crop. The prospect is very good for late potatoes, and neither blight nor rot has appeared. All fruits will give very light yields. Pasturage is in excellent condition. Oats and barley are not more than average crops. There are only a few specialists in poultry in this vicinity. Many of our farmers keep a small flock of hens, which have the run of the farm and do well in summer, but they get very few eggs in winter.

BRISTOL COUNTY.

Attleborough (ISAAC ALGER). — Indian corn will give some fodder, but not much corn. The prospect for rowen is poor. Late potatoes are looking well. Few apples; pears poor; no peaches or grapes. Pastures are in good condition. Oats and barley are average crops. One in a hundred of our farmers gives poultry the care it should have for good results. Cranberries were all destroyed by late spring frosts, except where the bogs could be flooded, so the crop is very small this season.

Norton (WM. A. LANE). — Corn is looking fairly well now, and will be a fair crop if the season holds out, but is late. Rowen promises to be a very good crop. Neither blight nor rot has appeared on potatoes. Apples will be a very light crop. Pastures have been good, and look well now. Oats are a large crop

this year. A majority of our farmers raise some poultry, and get good results from it.

Berkley (R. H. BABBITT). — Indian corn is very backward, and will not make more than half an average crop. Rowen is full up to an average crop. Late potatoes will not be a very good crop, as they are rotting badly. Apples light; pears plenty; no peaches; grapes few; cranberries much below the average. Pastures are in very good condition. Oats and barley are a little less than average crops. Not more than one in ten of our farmers gives poultry the care it should have for good results.

Swansea (F. G. ARNOLD). — Corn is about two weeks late, but looks very fair, and with hot weather will be all right. There will be about a normal crop of rowen. Yield of late potatoes fair, but both blight and rot have appeared in fields not sprayed to prevent them. Few apples; no peaches; pears and grapes quite plenty. Pastures are in good condition. Oats were a good crop. A very small proportion of our farmers give poultry the care it should have for good results.

Dartmouth (L. T. DAVIS). — Indian corn is still below its normal condition at this time of year. Rowen will perhaps be half or two-thirds of a normal crop. Late potatoes do not promise very well, and show some rot. Apples 40 per cent of a full crop; pears 20 per cent; no peaches; grapes 65 per cent. Pasturage is still in good condition. Oats and barley are mainly raised for forage crops. Perhaps half our farmers give poultry the care it should have for good results.

Acushnet (M. S. DOUGLAS). — Indian corn is about two weeks late. Rowen will be a normal crop. Late potatoes have been struck by blight, no rot as yet. Apples are scarce; no peaches or grapes; pears plentiful. Pasturage is in fairly good condition. Oats are extra good. About half our farmers give poultry the care it should have for good results.

PLYMOUTH COUNTY.

Norwell (H. A. TURNER). — Indian corn is very backward. Rowen is probably an average crop on land that was mowed early. Some fields of potatoes appear to be blighted. Apples are a short crop; peaches and grapes a failure; pears good; cranberries pretty fair. Pasturage is in very good condition. Oats and barley are about average crops. Very few give poultry the care it should have for good results.

Brockton (DAVIS COPELAND). — Corn is late, but some fields show good growth of stalks. With the frequent showers we are having, rowen is looking well. The prospect for late potatoes is

good if they do not rot, but blight has appeared. Very few apples; fair crop of pears; no peaches. Pastures are in good condition. Most of our farmers have more or less poultry, with good results.

Kingston (GEO. L. CHURCHILL). — Indian corn is a very light crop. Rowen is a fair crop, and on low meadows about an average one. Potatoes look fairly well, but show some blight. There will be a small crop of apples; no peaches; grapes scarce; cranberries a medium crop. Pastures are in very fair condition. Oats and barley little raised. Very few of our farmers keep much poultry.

Plympton (WINTHROP FILLEBROWN). — This has been rather a poor season for corn, and it did not ear out well. There will be an unusual crop of rowen. Where late potatoes were sprayed, there will be a good crop; but blight and rot are troubling other fields. There will be few apples; a good crop of pears; few peaches. Cranberry bogs that were flowed during the spring frosts have an excellent crop. Pasturage is in very fair condition. Oats and barley are of better quality than usual. About 75 per cent of the farmers that keep any amount of poultry care for them intelligently.

Lakeville (N. G. STAPLES). — Indian corn is two or three weeks late. Rowen promises about a normal crop. Potatoes are turning out well, but show some blight and rot. Pears are a fair crop; grapes fair; cranberries fair. Pasturage is in a little better condition than commonly. Oats and barley are about average crops. About 5 per cent of our farmers give poultry the care it should have for good results.

Rochester (GEO. H. RANDALL). — Corn has made a rapid growth, but is somewhat backward for this date. Rowen is about an average crop. Late potatoes give a good yield, but blight is quite general. Cranberries are half a crop; apples one-fourth; pears a full crop; very few peaches and grapes. Pastures are in better condition than usual for August. Oats and barley are less than average crops. The care of poultry is neglected by most farmers, especially through the hot weather, when other things are pressing.

Wareham (A. B. SAVARY). — Corn is a good crop. There will be a normal crop of rowen. The prospect is good for late potatoes, and neither blight nor rot has appeared. The prospect is poor for all kinds of fruit. Pasturage is in fair condition. Oats and barley are not raised except for forage. Not over 5 per cent of our farmers give poultry the care it should have for good results.

BARNSTABLE COUNTY.

Bourne (D. D. NYE). — Indian corn is in very good condition. Rowen is good as compared with a normal crop. No late potatoes are grown. Apples, pears, grapes and cranberries are nearly up

to last year's crops. Pasturage is in very good condition. Oats and barley are raised for forage crops, and are looking well. There are few good poultrymen among our farmers, but a few make a specialty of poultry, with a very little farming.

Mashpee (W. F. HAMMOND). — Corn is very backward, but is improving. There will be about half a crop of rowen. Late potatoes promise to yield well. Apples, pears and peaches half crops; grapes and cranberries two-thirds crops. Pastures are below average in condition. Oats are less than an average crop. There are but four of our farmers who pay any attention to poultry, and they have had very poor results this year.

Barnstable (JOHN BURSLEY). — Corn is in very poor condition. Rowen will be less than an average crop. The prospect for late potatoes is fair, and no blight has been noted. Apples good; pears and peaches very light; grapes and cranberries fair. Pasturage is in poor condition at present. Oats are more than an average crop. One-fourth of our farmers give poultry the care it should have for good results.

Brewster (THOS. D. SEARS). — Indian corn is very backward, and there will be a small crop. The outlook is for a good crop of rowen. The prospect is good for late potatoes, but there are signs of rot. There will be a fair crop of apples, pears and cranberries; not many peaches and grapes grown. Pastures are in quite good condition, but rain is needed to carry them out. Oats are an average crop. A very small proportion of our farmers give poultry the care it should have to make a success.

Chatham (E. Z. RYDER). — Indian corn is looking well, and promises a fair crop. Rowen will give more than an average crop. Late potatoes look finely, with no blight or rot. There will be about an average crop of all kinds of fruit. Pasturage is in better condition than for several years. Oats are an average crop. Very few farmers give much time to poultry; most of them keep a flock of hens or ducks, which they give plenty of corn and water, but which must otherwise shift for themselves.

Wellfleet (E. S. JACOBS). — Corn looks favorably, but is a little backward, owing to late planting. Rowen will be a much larger crop than usual. Potatoes are excellent, with no blight or rot. Apples and cranberries will be the leading fruit crops in quantity and quality. Pastures are looking nicely. No oats or barley are grown. Not more than one-third of the care and attention is given poultry that should be to warrant success.

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THE MANAGEMENT OF POULTRY ON SMALL FARMS.

By JOHN H. ROBINSON, *Editor Farm-Poultry, Boston, Mass.*

A large farm offers the best opportunity to keep poultry with little labor and comparatively large profits, but the owner of the large farm is not often much interested in poultry. It is the small farmers, under necessity of making the most of every opportunity to make money on their land, who are attracted by the possibilities of poultry culture. As personally and through correspondence I have for the last six years come in contact with owners and renters of small farms in the eastern States, and especially in Massachusetts, Rhode Island and Connecticut, who are trying to make a specialty of poultry, I have found that the most troublesome impediment to the development of their plans was the want of a method suitable to their circumstances.

A very large percentage of the small New England farms are of such dimensions and proportions that the fowls kept cannot be given liberty except at the risk of their trespassing on the land of neighbors. Because of this, many small farmers interested in poultry have adopted the intensive methods which small poultry keepers in towns often find necessary, but which large poultry keepers and farmers ought to avoid.

Intensive methods make the care of poultry a grind and drudgery, monopolizing the keeper's time to such an extent that it is almost fully occupied in caring for a few hundred fowls. Indeed, I have seen a great many people keeping poultry by such intensive methods that they hardly dared leave home for an hour for fear of disarranging their carefully balanced system, and could never by any possibility make a living by their methods if it became necessary for them to try to make their living from poultry. Many

farmers who have adopted intensive methods and found them for a while profitable have neglected other lines of farm work; while others, unwilling to give time to poultry to the neglect of other farm work, have reluctantly given up the idea of increasing their stock of fowls. The best solution of the problem of the small farmer who wants to keep a few hundred hens, and still give most of his time to and use most of his land for other things, will be found, I think, in the adoption of methods intermediate between the intensive methods of the town lot poultry keeper and the free and easy methods which work well on large farms.

For more than a decade now the interest of poultry keepers has been almost monopolized by intensive methods. Periodically the colony system has been illustrated and described, and has attracted some attention; but outside of localities where it was developed it has as yet made little impression, though within the last two years interest in the colony plan seems to be rather more general and more persistent. Intermediate methods have been used in isolated instances quite numerous collectively, yet few in comparison with the number of poultry keepers; and I suppose any one who would take the trouble to look the matter up would find that intermediate methods had not been as much neglected by writers on poultry matters as the failure of readers generally to become interested in them would be presumed to indicate.

Just why more people have not been interested in the methods theoretically best adapted to their circumstances is to me something of a puzzle. Perhaps it is because most of us are imitative, and prone to do things the way we see most of those about us doing them, or as those who seem to be successful tell us they do them. For some years now poultrymen have been keenly interested in the development of great egg producers, and in making records of large average egg production. Intensive methods are required to secure high averages, as well as to enable one to closely watch individual performance of laying hens. It has been customary to estimate profits in poultry keeping on the average difference between cost of feed and value of eggs or poultry produced, and to make comparisons of the work of different flocks on this basis, no figures being furnished for and no account made of the time spent in caring for the fowls and of differences in value or cost of labor. It has generally been taken for granted that the man or woman who could get the largest individual egg yield or the highest average was the most successful poultry keeper. However that may appear at first glance, it is easily discovered, by any one in a position to investigate, that the large egg yield is often obtained at such cost of care and food that,

while the average profit per hen figures large, the poultry keeper's pay for his time figures small. It is a general fact, easily verified, that the poultry keepers who get the most satisfactory net results in money in most cases get only very ordinary egg yields. Their results are satisfactory, their work is workmanlike, and their venture stands on a business basis, because their modest results give good pay for time and effort required to produce them.

The man who has only a little land and can use it all for poultry and could use none of it for anything else will find intensive methods of poultry keeping the best for him; but I am convinced, from what I have seen of such plants, that as a rule the proprietors work harder for what they get, and are more tied to their work by the inevitable daily routine, than if they had more room and could use an easier system; and I rarely find one of these poultry keepers who would not gladly change to a location where he could have more room and an easier system. But, having once adopted the intensive system, a man whose land does not furnish room for a change cannot often make a change of systems except by changing location and making sacrifices he cannot afford to make. So he goes on with the intensive system, keeping many fowls on a small plot of ground, and doing for the fowls or working to compel them to do many of the things they do for themselves under more natural conditions. It is only so that in his circumstances and by his methods he can make a day's wages by a day's work.

By the colony system the owner of a large farm will distribute his fowls over the farm, and, by giving them room and range, relieves himself of the necessity of doing for them many of the things which the poultry keeper who uses intensive methods must do daily.

To illustrate: When fowls are confined in small yards, the grass is so quickly killed out, or at best so soiled by the fowls, that they eat only a little of it, — and that little under protest, — and do not get green food in quality and quantity proportionate to their needs, unless it is especially given to them. To get green stuff for a considerable number of fowls so confined sometimes taxes the ingenuity of the keeper, besides consuming time and occasioning more or less cash outlay.

Similarly with meat food. Fowls confined to small yards — either yards that are actually small or those that are small for the number of fowls occupying them — soon exhaust the supply of worms and grubs near the surface, and the occasional flying insects which come within their reach are as nothing compared to what they would get if foraging over a good range. To compen-

sate for this lack, the keeper must provide something. Whatever he provides costs something in time or money, — often in both.

Then, as to exercise: Fowls at liberty naturally and voluntarily take sufficient exercise to keep them in good condition. They may take more exercise than is consistent with economy of food consumed, but the error is on the right side when looked at from the point of view of one who is trying to save labor. Fowls in confinement usually have to be compelled to take exercise. The grain fed them is buried in litter, and to get it they must scratch it out. Various other expedients to assure the keeper that the fowls will get needed exercise are in vogue. When the fowls are confined, compulsory exercise seems to be needed to keep them in good condition, — some experiments made to determine comparative merits of exercise and no-exercise systems to the contrary notwithstanding. Volume of egg production for a short period is not the only standard to be applied in making such tests. In matters of this kind the consensus of opinion of many intelligent and observant poultrymen, noting for themselves the general differences in results by the two systems, is apt to be more nearly correct than the conclusions of experimenters. Experiments have generally indicated no noteworthy advantage from exercise, when comparison was made of results of keeping similar lots of fowls under such conditions that one lot got its food without exercise, and, being confined, took no exercise worth speaking of, and another lot worked busily all day long for what food the fowls in it got. But in some of these experiments it would appear that perhaps the exercised hens had to take too much exercise for their good. Experience has roughly demonstrated that exercise (compulsory, when it would not otherwise be taken) is a practical if not an absolute necessity. I know a poultry farmer who keeps fowls through the winter without exercise enough to keep them in good condition. He almost always has eggs in fair supply in early winter and in abundance through mid-winter, but his hens are very apt toward spring to get too fat, to their detriment both as layers and breeders; and, though that is not the only cause of his troubles in growing chickens, it is one reason why he is less successful in that branch of his work than in getting eggs, and finds it harder to produce layers than to get eggs after he has got the layers.

To keep hens in good productive condition throughout their natural lives of usefulness, which in the laying hen should be two seasons and in the breeding hen three or four, regular easy exercise is essential. To give it to hens in confinement, the keeper must provide litter of suitable material, leaves, straw and coarse hay being most commonly used; and, removing the worn-out and

adding new litter as required, must give no little time to that item of work the year round. In most parts of this State all fowls are confined to the houses much of the time during winter, and are better off if made to take some exercise. But fowls which have good range get all the exercise they need, foraging over it through eight or nine months every year, and during those months the keeper does not need to make special provision for exercise for them.

Besides the things just mentioned which must be done directly for the fowls, whoever keeps poultry in close confinement needs to keep houses clean and to turn over the earth in the yards at frequent intervals, and in small yards this work has to be done mostly with spade or fork. In all these ways the average time per fowl devoted to the care of a flock of poultry is increased; so that, while we find many poultrymen using intensive methods fully occupying their time with the care of 400 to 500 hens, we find farmers keeping hens on large farms on the colony plan doing the routine work of caring for 1,200 or more hens as a part of the morning and evening chores, and making more money actually, and very much more for time consumed than intensive poultrymen do, though the latter can show averages per fowl that make the common averages by colony methods look small.

Another point of difference between the two systems which should be emphasized in this connection is that, to be successful, intensive methods require much greater skill and more experience than are needed to make poultry keeping profitable under less artificial conditions. So it happens that, while the poultryman using intensive methods finds that, even with land, capital and the wish to extend operations indefinitely, he is limited by the difficulty, often amounting to impossibility, of getting help it will pay him to use; while the colony farmer's operations are, generally speaking, limited only by the number of fowls his land will carry by his system. He uses ordinary farm help, — men who do the poultry work as "chores," and work in the fields through the day. Some of these men are, of course, better "hands" with the poultry than others; but the advantages of natural conditions offset all ordinary consequences of inefficiency to such an extent that the close supervision required on intensive poultry plants where help is employed is not necessary, and the average farm hand makes an average good poultryman.

I have given this extended illustration of differences between the system appropriate for the poultryman under necessity of keeping fowls in close confinement and that used by farmers who, with only such modifications or elaborations as the scale of opera-

tions requires, apply ordinary farm methods to a large stock of fowls, because it is desirable that, before explaining the intermediate methods which suit intermediate conditions, we should have clearly before us the leading contrasts of the systems between which we wish to strike the happy medium.

What we are seeking — what I suppose four out of every five small farmers who become especially interested in poultry want, even when they don't fully appreciate what it is they want — is a method by which the farmer can keep as much poultry as possible without giving the poultry the detailed attention which must be given when the land occupied is stocked to the limit of its capacity.

The problem is neither a deep nor a difficult one. That it has been so seldom solved, and that statements of the solutions have attracted so little attention, seems to me to be due to the preoccupation of poultry keepers with other methods. However that may be, it is a fact more self-evident in southern New England than in any other section of the country that small farmers undertaking to specialize in poultry have almost invariably adopted intensive methods, and almost invariably to their own detriment, handicapping their efforts to make poultry pay, and frequently also handicapping themselves heavily in their general work.

I have seen farms by the score on which were poultry buildings and yards unused, except as a few fowls went through or stayed in at will, and rapidly going to decay; and I have seen other farms by the score where it was plain that the effort to make poultry pay was being persisted in almost hopelessly, and at the expense of some or all other opportunities of the farm; and this in the section of the United States which, in my judgment, is favored above all others in the all-important matters of climate and soil for poultry culture, and good markets for poultry products. When there is so much of this to be seen, what wonder is it that people are continually asking, "Is there money in poultry?" and, when told that there most certainly is, ask, "Then why are there so many poultry plants standing idle, and so many for sale?"

I don't want readers to infer that I attribute to the use of inappropriate methods all the failures to make poultry pay on these New England farms. A good many of these unused poultry plants are monuments to inexperience, lack of capital or utter lack of adaptability to the work. Many of them are the sepulchres of foolish expectations of city-bred men, full of ideas and theories, but with no knowledge of or training in any of the pursuits of country life. It is not such failures as these that we are now discussing; it is the failure — or, where failure has not yet come, but seems impending, — the situation of the farmer who might reason-

ably be expected to make his poultry profitable, that just now concerns us.

The common trouble in these cases has been that, whether few fowls or many were kept, when the owners could not let them run at large because they would trespass on the premises of neighbors, they have gone to the other extreme, and, adopting the methods of small city poultry keepers and of exclusive poultry keepers, have put themselves in a position where they could not properly look after both the fowls and the other farm work. Generally all the work on the farm has suffered, in consequence.

It must be admitted that intensive methods present some features which in practice as well as theoretically are alluring to most of us. The plant is compact, and is generally so arranged that most of the work of caring for the fowls can be done under cover. It saves the attendant from exposure, and it saves steps. It seems to place us in the zenith of comfort, and offer us the acme of economy in labor. Let us look into it a little more closely, from the small farmers' point of view, keeping in mind the extra burdens which intensive methods impose on the one who has care of the poultry.

When one begins to plan to keep fowls by intensive methods, he first decides how many fowls he will keep, in how many flocks, and how many in each flock. Then he plans his house to fit the flocks, and makes his yards of width to correspond with the divisions of the houses, generally making them no larger than is necessary to get the minimum allowance of yard room per fowl considered safe. The result is, that in nearly every case the yards, while sufficient if breeding pens of a few fowls each are kept in them, are entirely inadequate when the compartments of the house are stocked, as they usually are, to their full capacity.

The truth is that the parts of the system do not fit. The amount of yard room needed to keep fowls so that the poultryman can save on his labor cannot be had in connection with the pens in the long houses which are the principal feature of the intensive system. As the farmer who cannot let his poultry have free range must have yards, the obvious thing for him to do is to lay out and proportion his yards according to the size of his flocks, limit the total of fowls kept to the capacity of the land available for yards, make the houses of such dimensions as are required, and place them singly or in pairs, where they can be most conveniently reached by the attendant when making the rounds of the place.

This has been done here and there; but many who ought to use such a method have never given any attention to it, and quite a number who have been interested in it as they saw the system in satisfactory use have hesitated to adopt it for themselves, because

they are reluctant to give up the compact, continuous house plan, and because they think they cannot afford the expense of fencing large yards.

When large yards are used, the houses need not be very far apart. If, instead of a yard 18 feet wide by 75 to 150 feet long, which is about the way the yards range for a style of house which is quite common, and is usually rated as having a capacity of 25 to 30 fowls in each of its 10 by 18 feet sections, we make a yard two or three times as wide, the house arrangement would be either a separate house for each yard, or two-section houses placed so that the division fences between the yards with which the respective compartments connected would be on a line with the partition through the middle of the house.

Suppose we have yards 36 feet wide and 150 feet long; this will generally give ample yard room for 25 or 30 hens. If the lay of the land is such that the yard cannot be 150 feet long, the width must be increased to give the required area. With yards 36 feet wide and double houses, the distance between two houses is only 36 feet. If we have in a row four of these double houses, with eight yards, the distance from end to end of the row of houses is 252 feet, — 108 feet more than if the sections were all in one continuous house. If one builds houses that far apart, and makes the rounds of the plant as many times a day as some poultry keepers do, that 108 feet, doubled, because he must go to the end and return, can be made the basis of a calculation showing many miles traveled and much time lost because of the ground to be covered. But with the large yards it is not necessary to make these numerous daily circuits. Some poultry keepers who give ample yard room feed the grain to their fowls in hoppers in the houses, and, by using a hopper which needs replenishing only once or twice a week, find it necessary to visit the house at most only twice daily, and often make only one visit.

The method I am using on a three-acre place in a small town could be applied on a small farm, and make it necessary to go around only twice a day; though, because we have not far to go, we don't often try to combine the doing of several things when making one circuit. I will describe our way of feeding a little farther on. Here I want to get back to the point of the expense of large yards. Four double houses, each accommodating 50 to 60 fowls, provide quarters for 200 to 240 fowls. To give these fowls the amount of yard room designated as sufficient will require no more cost for division and side fences than if the houses were all joined in one. The doubled yard area is secured by simply doubling the length of each end fence. Even supposing that the

same height of fence was required, this extra cost of fencing would not be considerable, and would be insignificant when compared with the saving in labor effected by giving ample yard room ; but it will be found that as yards are enlarged the height of the fence can be reduced, and thus it may be actually cheaper to make the larger yards. I have this year kept Dorkings with a fence only 3 feet high, and never had one of them attempt to go out, though they can easily fly a fence 5 or 6 feet high. Their yard is just as good as what lies beyond, and they are always fed there, so there is no temptation to go out.

When properly reckoned, the actual cost of large yards is not a heavy tax on the poultry keeper, and, comparatively, the smaller yard always costs more per enclosed surface. It costs a little more to build four two-section houses than to build one eight-section house, but the difference is not great. In yards of about the dimensions given as desirable, some a little larger, some a little smaller, I keep from 20 to 30 Light Brahmas, the number varying according to conditions and to the stock on hand. I aim not to have more hens in a yard than will leave it in this condition : For 15 to 25 feet from the house the ground will be quite bare ; beyond this to about midway of the length of the yard the grass will be generally good, but short ; the other half of the yard will have quite long grass, long enough to conceal grain thrown in it, and require the hens to hunt and scratch for their grain just as they do for the various wild seeds they find when foraging far and wide on open range. I am away from home nearly always through the day, and frequently not home until after feeding time in the evening. Occasionally I am away for two or three days or a week at a time. So I had to make such conditions for my fowls that they could be cared for with the least possible work, and would not suffer from inexperienced or irregular feeding. The hens get a mash in the morning, and often the noon feed of grain is scattered in the grass immediately after the mash is fed. That would be done regularly, were it not that the grain lying about attracts too many pigeons and sparrows. But whenever it would be inconvenient for the folks at the house to feed at noon, grain is given in the grass right after the morning mash, and, the hens having been given a supply of water for the day, there is no need of any one going near them again until evening. They can get along and keep in good condition without other green food and animal food than they get in the yards ; but I like to give both hens and chicks all the meat they can stand, so feed beef scrap in mash regularly. The fowls at some time or other get all the waste green stuff from the garden ; but in giving it I can consult my own con-

venience, knowing that they can get good green grass whenever they choose to pick it, and will not suffer if I find other things of more importance to do, and neglect giving them special feeds of vegetable for a long time. Quite a number of farmers I know handle fowls by methods very similar to those I use, the essential thing being to avoid conditions, a ration, or a routine that keeps the attendant constantly at the beck and call of some feature of the system.

In growing young chickens I cannot now make as satisfactory an application of the ideas described, because I have to guard against city cats, and keep chicks in coops while small; but a few years ago, when located where cats were no trouble, we gave the chicks the run of a small orchard, fed them a mash in the morning, kept cracked corn standing before them all the time, and gave other feed or not through the day, as happened to be convenient.

Given the right conditions, one can do this with both old and young fowls. The suitable conditions are found on almost all small farms, when either the fowls kept are given ample yard room, or the land which can be utilized for fowls is not stocked so heavily that its natural facilities fail.

I think we have disposed of the problem of feeding and watering, indicating how it can be done and the farmer left free to give the whole day between chore times to other farm and field work. Another problem that causes some trouble is keeping houses and yards clean. When the fowls are given large yards, the work of caring for them is very much reduced. The large yard on soil of the sandy character common throughout New England does not become foul. The droppings are well distributed over it, and the rains disintegrate them and leach them down into the soil, where they nourish the roots of the grass and trees. With the large yards, too, it is easier to take care of the houses, for the hens are in them less, droppings do not accumulate so rapidly, and it is not so necessary that there should be regular and frequent cleanings.

I use no droppings boards, and, by keeping the floors of the houses well littered with dry leaves, which absorb all the moisture in the droppings, find that I can let the droppings remain for weeks and yet leave the house free from bad smells, and, as the droppings are hidden in the leaves, cleaner to look at than half the houses I see that are cleaned daily. In winter I have let my houses go without removing the droppings for several months. I don't advise others either to do without droppings boards or to let their houses go so long uncleaned, unless they are sure they can control the situation. If there is much looseness among the fowls, it will not do at all to let droppings accumulate. With

some kinds of litter the droppings cannot be allowed to accumulate. Dry leaves I have found better than anything else, if one has them in sufficient quantity to keep the litter always deep on the floor of the houses. In England many farmers use peat moss, and allow droppings to accumulate in it for nearly a year. In Rhode Island the colony-plan poultry farmers set a board on edge on the floor just forward of the outer roost, and throw dry earth, a few shovelfuls at a time, from the other side of the floor on the accumulating droppings. This accumulation of earth and droppings is removed once or twice a year. Poultry manure normally is of such character that if one takes proper care of it where it falls in the house it is not necessary that it should be promptly removed; and the small farmer, taking advantage of this fact, can arrange his roosts and their surroundings so that he can clean when convenient. He is not required to choose between taking time to clean the houses daily or having houses in condition to be ashamed of.

Poultry keeping ought to be an important feature on every farm, and a pleasant feature of farm work. It may be, if the farmer will only study to adapt his stock and his methods to the capacity of the farm under conditions satisfactory to him.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF SEPTEMBER, 1903.

ISSUED BY

J. LEWIS ELLSWORTH,
SECRETARY STATE BOARD OF AGRICULTURE.



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CROP REPORT FOR THE MONTH OF SEPTEMBER, 1903.

OFFICE OF STATE BOARD OF AGRICULTURE,
BOSTON, MASS., Oct. 1, 1903.

Bulletin No. 5, Crop Report for the month of September, is presented herewith. Attention is called to the article at the close of the bulletin, on "Some Important Scale Insects," by Prof. H. T. Fernald, professor of entomology, Massachusetts Agricultural College. This article is in a sense supplementary to his article on "Three Common Orchard Scales," published in our crop report for May, 1901, and reprinted in the report for June, 1902, but is more thorough and exhaustive than either, taking up the treatment of the San José scale in orchards and including several scales not mentioned in the earlier bulletin. It should be of particular interest to all orchardists and nurserymen.

PROGRESS OF THE SEASON.

The September returns of the United States Department of Agriculture (Crop Reporter for September, 1903) show the condition of corn on September 1 to have been 80.1, as compared with 78.7 on Aug. 1, 1903, 84.3 on Sept. 1, 1902, 51.7 at the corresponding date in 1901, and a ten-year average of 79.3. No attempt was made to anticipate the results from future weather conditions.

The average condition at harvest of winter and spring wheat combined was 74.7, against 80 on Sept. 1, 1902, 82.8 at the corresponding date in 1901, and a ten-year average of 78.3.

The average condition of the oat crop on September 1 was 75.7, against 79.5 on Aug. 1, 1903, 87.2 on Sept. 1, 1902, 72.1 at the corresponding date in 1901, and a ten-year average of 80.6.

The average condition of barley on September 1 was 82.1, against 83.4 on Aug. 1, 1903, 89.7 on Sept. 1, 1902, 83.8 at the corresponding date in 1901, and a ten-year average of 82.2.

The average condition of rye on September 1 was 84.1, against 87.2 a month earlier, 90.2 on Sept. 1, 1902, 84.9 at the corresponding date in 1901, and a ten-year average of 85.5.

The average condition of buckwheat on September 1 was 91, against 93.9 a month earlier, 86.4 on Sept. 1, 1902, 90.9 at the corresponding date in 1901, and a ten-year average of 84.4.

The average condition of flax on September 1 was 80.5, against 80.3 a month earlier, and 86.2 on July 1, 1903.

The average condition of potatoes on September 1 was 84.3, against 87.2 a month earlier, 89.1 on Sept. 1, 1902, 52.2 at the corresponding date in 1901, and a ten-year average of 76.

The average condition of tobacco on September 1 was 83.4, against 82.9 a month earlier, and 85.1 on July 1, 1903.

All but five of the principal cloverseed-producing States report decreased acreage, but conditions in these principal States are generally above the ten-year averages.

The average condition of rice on September 1 was 93.6, as compared with 92 a month earlier, and 93.5 on July 1, 1903.

The number of stock hogs being fattened was 5.1, less than the number being fattened a year ago. Reports show a condition of 95.1, as compared with a seven-year condition of 94.2.

The average condition of cotton on August 25 was 81.2, as compared with 79.7 on July 25, 1903, 64 on Aug. 26, 1902, 71.4 on Aug. 24, 1901, and a ten-year average of 72.4.

In Massachusetts the average condition of corn September 1 was given as 58; the average condition of oats as 94; the average condition of rye when harvested as 90; the average condition of buckwheat as 87; the average condition of potatoes as 86; the average condition of apples as 53; the

average condition of peaches as 19; the average condition of grapes as 62; the average condition of tobacco as 78; the number of stock hogs fattening as compared with last year as 99 and their average condition as 96.

TEMPERATURE AND RAINFALL FOR THE WHOLE COUNTRY.

[FROM UNITED STATES CLIMATE AND CROP BULLETINS.]

Week ending August 31.—The week averaged cooler than usual in the Pacific coast States, middle and northern Plateau districts and over the northern portions of the country eastward of the Rocky Mountains. In the Ohio, central Mississippi and lower Missouri valleys, over the northern portions of the middle Atlantic States and throughout the southern States the week averaged warmer than usual. Generally throughout the northern portions of the country from the Atlantic to the Pacific the rainfall exceeded the weekly average, being very heavy in the middle Atlantic States, Lake region and upper Mississippi and Missouri valleys. There was also more than the usual rainfall in northern Florida and over limited areas in the central and west Gulf States, although as a whole the precipitation in the southern States was much below the average, especially over the interior districts.

Week ending September 7.—The week was cooler than usual in the middle Atlantic States, Ohio and Mississippi valleys, the Lake region and in the central and west Gulf States. Throughout the eastern and southern Rocky Mountain slopes, the Plateau region and the Pacific coast States the week was warmer than usual. There were also slight excesses over northern New England and in Georgia and Florida. There was less than the usual amount of rain throughout the country, the exceptions being in Wisconsin and Minnesota, and in small areas in Iowa, New England, along the south Atlantic coast and in Washington and Oregon. A large region extending from Texas northward to Kansas and eastward to Pennsylvania, including the lower Lake region and the greater part of the southern States, received practically no rain.

Week ending September 14.—The week was decidedly cool from the north Pacific coast eastward to the Dakotas

and northern Minnesota, and in the central Rocky Mountain and Plateau districts. Along the coast of central and southern California, over the southeastern Rocky Mountain slope and in the districts eastward of the Mississippi River the week averaged warmer than usual, the excess in the central Mississippi and Ohio valleys, Lake region and middle Atlantic States ranging from 3° to 9° a day. There was more than the average rainfall from the north Pacific coast eastward to the upper Lake region, including the lower Missouri and central Mississippi valleys. The Atlantic coast districts, the greater part of the central and west Gulf States and portions of the lower Ohio valley and lower Lake region received less than the average rainfall.

Week ending September 21. — The week was warmer than usual in New England, over the northern portion of the middle Atlantic States, the eastern portion of the lower Lake region, on the north Pacific coast and in central California. Over the greater part of the country the week was cooler than usual, being decidedly cool in the central Plateau and Rocky Mountain districts, Missouri and upper Mississippi valleys, and over the northern portion of the southern States. Over a large part of the south Atlantic and east Gulf States the rainfall was unusually heavy. Portions of the middle Atlantic coast districts, central Texas and local areas of limited extent in the Missouri valley also received more than the usual amount. The Ohio valley, the greater portions of the upper Mississippi valley, upper Lake region, middle Atlantic, central and west Gulf States received less than the weekly average.

Week ending September 28. — In the central Missouri valley and over the middle and northern Rocky Mountain and Pacific coast districts the week averaged considerably warmer than usual, and it was slightly warmer than usual over the eastern portion of the lower Lake region, the northern portion of the middle Atlantic States, New England, and the interior of the south Atlantic States. In the central valleys, upper Lake region, central Gulf States and over portions of the middle and south Atlantic States the week averaged slightly cooler than usual. The weekly precipitation exceeded the average over limited area in the

central Mississippi valley, upper Lake region, and at a few stations on the southern New England and middle Atlantic coasts. Elsewhere, east of the Rocky Mountains the rainfall was below the average

SPECIAL TELEGRAPHIC REPORTS.

[WEATHER BUREAU, BOSTON.]

Week ending August 31. — New England. Boston : Cool, damp weather, unfavorable for work and growth ; some small grain and grass yet to cut, good yield ; both rowen and pastures in good condition ; scattered blight and rot damaged potatoes, but main crop of good quality, average yield ; little improvement in corn, small amount will mature ; gardens backward, small yield ; vine and root crops doing well ; abundance of apples in some localities, few or none in others ; tobacco leaf remarkably free from blemishes, probably average crop of good quality.

Week ending September 7. — New England. Boston : Week generally favorable for growth and work, except hail on the fifth damaged uncut tobacco and fruit ; sweet and field corn below average ; tomatoes ripening slowly ; cabbages, turnips, beets and celery good ; much rot in potatoes in scattering localities ; first haying about completed ; good second crop ; apples coloring fast, good crop in many hill orchards ; good quality of cranberries, quantity below average.

Week ending September 14. — New England. Boston : With exception of frosts that damaged vine crops and corn, especially in northern States, the week was very favorable ; corn poor ; small grains good ; vine crops poor ; potato blight and rot serious, except in Maine, where less ; apples falling much in places ; haying practically completed, yield average, quality below ; tobacco mostly hung, leaves small and light weight, but excellent texture ; some damage to cranberries by frost.

Week ending September 21. — New England. Boston : Warm weather first of week favorable ; some damage to corn and apples by high winds ; all crops injured by frost ; much corn will not mature ; potatoes where not sprayed rotting

badly, both in field and cellar; root crops promising; vine crops backward, many killed by frost; tobacco practically all cut, average yield, quality generally good.

Week ending September 28. — New England. Boston: Week very favorable for growth and harvesting crops; corn poor; much ensilage cut, poor; potatoes continue to rot badly in most sections; much winter fruit blown off, crop will be small; vegetables injured by frosts; turnips and cabbages in good condition; tomatoes poor; tobacco curing well.

THE WEATHER OF SEPTEMBER, 1903.

The weather the closing days of August continued cloudy, cool and unseasonable, but with the opening of September the type changed to warm, pleasant and sunny weather, with clear skies, and temperature normal and above during the first five days of the month, reaching maxima of 80° and above on the 4th and 5th. This period of fair and comparatively warm weather was broken on the 5th by showers and storms, accompanied by heavy thunder, sharp lightning, and in some instances by hail, which in places caused considerable damage. From the 6th to the 9th, inclusive, cooler temperatures prevailed, the highest of the day generally ranging between 60° and 70°, and at night falling below 45° in many places, and sufficiently low to cause frosts, which were not widespread or severe. After the 9th the temperature again rose, and was much above the normal for the season until the 19th; the highest temperatures of this warm period occurred on the 13th, 14th and 15th, when the maxima ranged near 90°. After the 5th fair and generally clear weather accompanied the higher temperature until the 16th and 17th, when general and quite heavy showers occurred, with high winds. After the 17th another period of fair weather set in which continued until the 27th, although with more cloudiness than the ten days of fair weather that preceded the 17th. On the afternoon and evening of the 27th general showers occurred, with copious rainfall and heavy thunder and lightning, doing more or less damage in a number of places. These unsettled conditions passed off before the morning of the 28th, fair

and generally clear weather prevailing during the remainder of the month, after that date. From the 19th to the close of the month the temperature was generally seasonal, ranging from one to six degrees below and above normal in alternating periods of two or three days. The cool periods were about the 19th, the 24th and 25th, and the 28th, when the temperature fell so as to cause frosts in many localities. In general the weather conditions of the month were seasonal and very favorable, and much more so than those preceding in August.

In the circular to correspondents returnable to us September 25 the following questions were asked : —

1. How does Indian corn compare with a normal crop?
2. Are the rowen crop and fall feed up to the usual average?
3. Has the usual amount of fall seeding been done, and what is its present condition?
4. How does the onion crop compare with a normal crop?
5. How do potatoes compare with the normal in yield and quality?
6. What is the prospect for root crops, celery and other late market-garden crops?
7. How have apples, pears, peaches, grapes and cranberries turned out?

Returns were received from 153 correspondents, from which the following summary has been made : —

INDIAN CORN.

The warm weather of the month brought Indian corn forward rapidly, but it is nevertheless one of the poorest crops ever secured, poorer even than that of 1902. There has been damage from frost in some localities, and even where the crop has escaped thus far it is not eared out well and many imperfect ears are reported. The stover is also poorly developed and many dairy farmers will not have enough to fill their silos. Where it has escaped damage from frost it should be of good nutritive value, both for stover and ensilage. Much of the crop remained to be cut at the time of making returns.

ROWEN AND FALL FEED.

Where the first crop of hay was cut early the rowen crop is phenomenally heavy, but many fields were cut so late that it is doubtful if more than an average crop is secured as a whole. The weather of the month has been very favorable for securing the crop, and it is of excellent quality. Fall feed is in excellent condition all over the State, with the exception of Cape Cod and a few localities in Bristol and Plymouth counties. With seasonable rains during the coming month pastures and mowings should make a good start next spring.

FALL SEEDING.

All farm work was delayed by the lateness of haying, and at the time of making returns much less fall seeding than usual had been done. The work was progressing well with the fair weather, and probably as much as usual will finally be put in. That sown early made a good catch and was growing luxuriantly, but there were many reports that the later sown seed was lying dormant in the ground, awaiting rain to promote germination.

ONIONS.

Onions are a very poor crop in most localities. Giving the reports from the regions of principal production the weight they deserve it is probable that not over half a crop will be secured. There is much complaint of blight, which shortened the crop in many localities, and also that those remaining green were dying down very slowly, with small bottoms and an undue proportion of thick necks. The quality of the crop therefore is not likely to be up to the standard.

POTATOES.

Potatoes promise to be an unusually good crop and the yield would undoubtedly have been large but for the presence of rot, which was general throughout the State, though perhaps more destructive in the western counties than elsewhere. Not more than three-fourths of a crop will be secured

on the whole, and many fields have been total failures. The quality of the tubers is generally excellent where unaffected by rot.

ROOT CROPS, CELERY, ETC.

Root crops are generally reported as promising well, though somewhat late in most sections. Celery is also a good crop so far as reported. Other late market-garden crops generally give good promise, but are not especially forward and are in need of further warm weather for best development.

FRUITS.

Apples were blown from the trees to a considerable extent by the high winds of the 16th and 17th, but still give a better crop than is usually secured in an off year, although the fruit is not especially large or free from blemishes. Pears are a fair crop, though perhaps not as good as previously indicated. Very few peaches were secured. Grapes did not develop according to the promise of the earlier season and the crop proved to be nearly a failure. Cranberries are a light crop in the sections of commercial production, probably even lighter than that of last year.

NOTES OF CORRESPONDENTS.

(Returned to us September 23.)

BERKSHIRE COUNTY.

Alford (L. T. OSBORNE). — Indian corn is not yet ripe and is said to be the poorest crop ever known. Rowen and fall feed are above the average in condition. Fall seeding has been late and farmers are badly behind; weather now very favorable. Potatoes are rotting badly and some fields are total failures. Fruit of all kinds is much below the normal in this section.

Tyringham (E. H. SLATER). — Corn will yield about a two-thirds crop. A good supply of rowen has been harvested and fall feed is better than usual. The yield of potatoes compares favorably with former years and the quality is good. There is a good supply of apples but not as many as last year.

Becket (WM. H. SNOW). — There is not half a crop of corn and very little of it will do for seed. Rowen and fall feed are fully up to the usual average. Less than the usual amount of fall seeding has been done, but that put in looks well. Potatoes have made a full average yield of good quality. The prospect for root crops, celery, and other late market-garden crops is very good. There will be a fair crop of apples and pears.

Stockbridge (F. A. PALMER). — Indian corn is far below the normal, say 20 per cent. Rowen and fall feed are above average in condition. About the usual amount of fall seeding has been done, but it is too early to judge as to condition as most are late in sowing. Potatoes are 80 per cent of a normal crop, quality fine, but with some rot. The prospect for root crops, celery and other late market-garden crops is extra good with us. Apples 30 per cent of a full crop; pears 40 per cent; no peaches; grapes 30 per cent; no cranberries.

Peru (F. G. CREAMER). — Indian corn is a very poor crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is in very good condition. Potatoes are above the average in yield and quality. Apples are a very good crop.

Hinsdale (THOS. F. BARKER). — Corn is decidedly the poorest crop for years. Rowen is not up to the usual average, but fall feed is in good condition. But very little fall seeding has been done, but what has been put in looks well. Potatoes are a good crop both in yield and quality. Root crops light; celery very good, but only raised for home use. There will be a fair crop of apples; light crop of pears. Some fields of ensilage corn look finely.

Cheshire (L. J. NORTHUP). — Indian corn is probably not more than half a normal crop. Rowen and fall feed are above the usual average. The usual amount of fall seeding has been done and it is looking finely where it is up. The onion crop is not quite up to former years. Potatoes would have given a large crop but rotted badly. The prospect for root crops is quite flattering. Apples are more plenty, than they were thought to be; grapes and pears quite good crops.

Lanesborough (SCOTT JENKS). — Indian corn is a three-fourths crop. Rowen and fall feed are above the average in condition. The usual amount of fall seeding has been done and it is looking well. Potatoes are from 10 to 20 per cent above a normal yield. The prospect is good for root crops, celery and other late market-garden crops. Apples about one-third of a normal crop; pears good; peaches a light crop; grapes below average. Fall feed has been good and cows are holding out well in milk.

New Ashford (ELIHU INGRAHAM). — Corn is about half a normal crop. Rowen and fall feed are up to the usual average. No fall seeding has been done in this section. There is a very fair crop of onions. Potatoes compare very well with the normal in yield and are of good quality. No root crops or celery are raised here. Apples are a fair crop; no peaches, grapes or cranberries raised.

Florida (E. D. RICE). — Not one-tenth of the corn crop will mature in this locality. Rowen and fall feed are up to the usual average. Not much fall seeding has been done as yet. Onions are not raised to any extent. Potatoes were a good crop but rotted badly. Turnips promise to be a good crop; other root crops not much raised. Apples are dropping badly and there are not many grapes.

FRANKLIN COUNTY.

Monroe (D. H. SHERMAN). — No Indian corn has matured. Haying was so late that there will be but little rowen; fall feed in fair condition. But very little fall seeding has been done in this section. Potatoes made a fair yield, but are rotting very badly;

quality otherwise good. Root crops, celery and other late market-garden crops will be almost a failure. There are a few apples and some pears; other fruits a failure.

Leyden (U. T. DARLING). — Indian corn is a very poor crop, the poorest for years. Rowen and fall feed are very much better than usual. The usual amount of fall seeding has been done and is looking well. Potatoes made a good yield of good quality, but are rotting very badly. The prospect for root crops, celery and other late market-garden crops is very good. Fruit of all kinds is very light.

Gill (F. F. STOUGHTON). — Indian corn is less than an average crop. Rowen and fall feed are up to the usual average. Onions are not raised. Potatoes made a good yield but are rotting somewhat. There will be but a light yield of all kinds of fruit.

Shelburne (GEO. E. TAYLOR). — There will not be over half or at most two-thirds of a normal crop of corn. Rowen and fall feed are in good condition. The usual amount of fall seeding has been done and it is in good condition. Potatoes yield well and are of superior quality. No pears nor peaches; a few grapes; apples short and poor in color and will not sell very high.

Ashfield (CHAS. HOWES). — Although there has been no frost as yet but little corn will mature. Rowen and fall feed are above average crops. The usual amount of fall seeding has been done and is looking finely. Potatoes are a good crop and are of good quality, but are rotting badly. The prospect for root crops, celery and other late market-garden crops is very good. Apples are of very good quality, but are a light crop. The hay and grass crops are about the only ones in this vicinity that are up to the average.

Whately (FRANK DICKINSON). — Indian corn is less than an average crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and is looking finely. Onions are less than a normal crop. Potatoes are a good crop in yield and quality, but show some rot. Apples are about half a crop.

Sunderland (J. M. J. LEGATE). — Very little corn has been cut and there is little of the crop that will ripen. Rowen is a very heavy crop, much above the average and fall feed is in good condition. Seeding is mostly done in corn and is looking finely. Onions are a very poor crop as almost all fields have blighted and they are not curing down well. Potatoes are above the average in yield and quality where they have not rotted, but there is some complaint of rot. Root crops, celery and late market-garden crops promise to be fully up to the average. Apples are a light crop; no peaches and but few pears and grapes. Tobacco is all

in with no damage from hail or insects ; there are a few fine crops, but much of it is small and yellow ; no pole sweat as yet.

Wendell (N. D. PLUMB). — Indian corn is about half a normal crop and but little has been cut as yet. Rowen will be about a normal crop ; pastures are in fine condition. But little fall seeding has been done as yet. Potatoes made a fair yield, but are rotting badly in field and cellar. The prospect for root crops, celery and other late market-garden crops is very poor. Apples are about half a crop ; pears abundant ; peaches and other fruits a failure.

Northfield (THOS. R. CALLENDER). — Less than half the corn crop will make sound corn. Rowen and fall feed are rather above average crops. Less than the usual amount of fall seeding has been done at the present time, but is looking fairly well. Few onions are grown but they are fully up to the normal. Potatoes made a fair yield but are rotting badly. Root crops, celery and other late market-garden crops are looking well. Apples are a light crop. Cucumbers for pickling were a partial failure. Tobacco is below the average.

Orange (A. C. WHITE). — The late warm weather has greatly helped ensilage corn, but that grown for grain is about a failure. Rowen is a fine crop and was secured in fine shape. Potatoes gave a normal yield, with but little rot. When apples are harvested there will be about enough for the home market ; other fruits scarce.

HAMPSHIRE COUNTY.

Greenwich (WM. S. DOUGLAS). — Indian corn is not up to a normal crop. Rowen and fall feed are in good condition. The usual amount of fall seeding has been done and it is in good condition. Potatoes made a good yield, but there is much complaint of their rotting. Apples, pears, peaches and grapes will give very light crops.

Pelham (J. L. BREWER). — Corn is a very uneven crop, but has improved greatly during the past month. Rowen and fall feed are up to the usual average. There has been but little fall seeding done and it is not advanced enough to report on. There is a fair crop of potatoes of good quality, with some complaint of rot. Root crops promise well ; celery is late. There are a few apples of second quality and some pears, but peaches and grapes are very scarce.

Amherst (WM. P. BROOKS). — Ensilage corn is about two-thirds of the normal ; field corn one-half ; numerous complete failures. Rowen is much above the average and fall feed is good. The

usual amount of fall seeding has been done and it is in nearly perfect condition. Onions are much below the normal, the crop being thin and late and there being many thick necks. Yield of potatoes above average; some rot where not sprayed; quality good. The prospect is unusually good for roots and celery; average for all late garden crops. Apples not picked, uneven but many good orchards; pears average for section; practically no peaches; grapes a light crop of good quality. Cutting ensilage corn has not yet been begun but must be soon; crop still too green for best results.

Hadley (H. C. RUSSELL). — Corn is less than half a crop. Rowen was never so good and fall feed is abundant. The usual amount of fall seeding has been done and it is in good condition. The onion crop is the poorest for many years and many acres will be all "picklers." Potatoes yield well, but are rotting. The prospect is good for root crops, celery and other late market-garden crops. Not many apples and the late high winds still further reduced the crop.

Northampton (H. C. COMINS). — Indian corn is about a two-thirds crop. Rowen is 25 per cent above the average crop. Most of the seeding is done in corn and is looking finely; other fall seeding is doing well. Onions are not much more than half a crop, as there is much blight and a large percentage of the crop will never dry down so as to be marketable. The quality of the potato crop is generally good, with rather light yield and some rot. The outlook for root crops and garden crops is poor; celery very good. There will be a very light crop of apples, pears and grapes.

Easthampton (WM. E. CLAPP). — Indian corn is below an average crop. Rowen and fall feed are above the usual average. About the usual amount of fall seeding has been done and it is in good condition. Onions are less than an average crop. Potatoes made a normal yield of excellent quality. The prospect for root crops, celery and other late market-garden crops is below the average. Apples, pears and peaches are nearly a failure. Grapes are an average crop.

Southampton (C. B. LYMAN). — Many fields of corn need two weeks of warm weather to ripen and the crop would then be light. Rowen and fall feed are fully up to the usual average. Less than the usual amount of fall seeding has been done as yet. Onions are about an average crop. The yield of potatoes is very good and the quality extra fine. The prospect for root crops, celery and other late market-garden crops is fair. Apples about one-third of a crop; pears very few; no peaches; grapes fair.

Huntington (H. W. STICKNEY). — Indian corn is about half a

crop. The usual amount of fall seeding has been done and it looks finely. Rowen is above a normal crop and fall feed is in fine condition. Not many onions are raised in this vicinity. Potatoes made a fair yield and on light soil not many have rotted. Root crops, celery and other late market-garden crops promise to be fully as good as usual. Apples are about half a crop; pears fine; no grapes.

Chesterfield (HORATIO BISBEE). — Indian corn is about an entire failure. Rowen and fall feed are good with but little frost as yet to damage them. The usual amount of fall seeding has been done and it is in good condition. The potato crop as a whole is not very good, some fields good while others are poor. Apples are fairly good for the off year; no other fruit of any account.

HAMPDEN COUNTY.

Chester (C. Z. INZELL). — Indian corn is a poor crop and not half of it will mature. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is looking well. Potatoes are a light crop and are rotting somewhat. Apples are a light crop.

Blandford (E. W. BOISE). — The corn crop is almost a total failure as to grain and not over half a crop as to stover. Hay and rowen were extra good crops and barns are well filled. Less than the usual amount of fall seeding has been done, but it is in good condition. Onions are a full normal crop. Potatoes are rotting badly, very few fields showing no decay, but are otherwise of good quality. Root crops promise fairly well but not up to the average. Apples promise to prove a good yield, mainly Baldwins; some pears; no peaches or grapes; cranberries a good crop. Stock will come to barns in perhaps better than average condition.

Russell (E. D. PARKS). — Farmers are just commencing to cut the corn crop, and a smaller yield than usual is expected. Rowen and fall feed are above the average on fields where the hay crop was taken off early. Less than the usual amount of fall seeding has been done as yet, but all that is in is looking nicely. Onions are a very poor crop. Potatoes are not up to expectations, quite a little rot being reported. The prospect is very good for root crops, celery and other late market-garden crops. Fruit promises very well, but apples are falling from the trees quite a good deal.

Westfield (C. F. FOWLER). — Many fields of corn are a failure except for stover. Rowen on early cut fields is heavy, but on late cut very light. Less seeding has been done as yet than is usual. Potatoes are yielding unusually well, but are rotting badly. Man-

golds are looking well. There are but few apples and pears, no peaches and few grapes.

West Springfield (T. A. ROGERS). — Indian corn will give a possible two-thirds crop, but can tell better when husked. Rowen and fall feed are fully up to the average. About the usual amount of fall seeding has been done and it is looking finely. Onions are not more than a two-thirds crop. The yield of potatoes was all right, but they have about half rotted. Root crops, celery and other late market-garden crops are looking finely and promise good crops. Apples few; pears and grapes plenty; very few peaches.

Agawam (J. G. BURT). — Indian corn will be only a light crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is in good condition. Onions are about an average crop. The yield of potatoes is good, but they have rotted badly. The prospect is good for root crops, celery and other late market-garden crops. There will be a good crop of pears, but no other fruit.

Ludlow (C. B. BENNETT). — There will not be over a two-thirds crop of Indian corn. Rowen is not up to the usual average, but fall feed is above. More than the usual amount of fall seeding has been done and it is looking finely. Potatoes have yielded well, but half the crop has rotted. The prospect is good for root crops, celery and other late market-garden crops. There are no pears or peaches; very few apples; grapes good. Ensilage corn is short and the leaves are narrow; no one has enough to fill the silos.

Wilbraham (H. M. BLISS). — The warm days of last week helped the corn crop and with no frost for two weeks many fields will improve greatly. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and is in good condition. Onions are about half a crop. Potatoes made a good yield of good quality, but show some rot. The prospect for root crops, celery and other late market-garden crops is fairly good. Apples are a little more than half a crop; few pears; no peaches; grapes and cranberries fair.

Monson (F. D. ROGERS). — Corn shows a good growth of fodder but needs a week or two of good weather to mature. Rowen is good on early cut fields. The usual amount of fall seeding has been done and is looking well. Potatoes are yielding better than usual; quality good, but rotting somewhat. The prospect is good for root crops, celery and other late market-garden crops. Apples are a light crop; practically no pears, peaches or plums; grapes rotted badly.

Holland (FRANCIS WIGHT). — Indian corn will be a very light crop. Rowen and fall feed are hardly up to the average. About the usual amount of fall seeding has been done and it is in fairly good condition. Onions are rather small in size and below a normal crop. Potatoes show a good yield but are rotting badly on some fields. The prospect for root crops, celery and other late market-garden crops is fairly good. Apples, peaches and grapes small crops; pears and cranberries better.

WORCESTER COUNTY.

Warren (W. E. PATRICK). — Indian corn is not over ten per cent of a normal crop. Rowen and fall feed are about up to the usual average. Less fall seeding has been done than usual, but it is in very good condition. Potatoes are above the normal in yield and better in quality than for many years. There is a fair crop of apples for an off year; pears average crop; no peaches; few grapes; no cranberries.

Brookfield (F. E. PROUTY). — Indian corn is not over half a crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is in good condition. But few onions are raised in this locality. Potatoes are a normal crop in yield and of good quality. The prospect for root crops, celery and other late market-garden crops is good. Apples are about a one-fourth crop; pears about half a crop; very few peaches; grapes not more than half a crop; no cranberries.

New Braintree (C. D. SAGE). — Corn is the poorest crop for years, a few fair crops, but much of it will not mature. The first crop of hay was cut so late that but little rowen will be cut and pastures are hardly up to the average. Fall seeding is being done the last week in September. The yield of potatoes is good, but there is much complaint of rot. Root crops, celery and other late market-garden crops are very little grown. Apples half a crop; pears a fair crop; no peaches; very few grapes.

Oakham (JESSE ALLEN). — Indian corn is almost a total failure. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it looks well. Potatoes are a full average crop in yield and quality. Root crops, celery and other late market-garden crops are little raised. Very few apples and pears; no peaches or grapes.

Dana (LYMAN RANDALL). — The warm September has been favorable for corn and it will be about half a crop. Rowen and fall feed are up to the usual average. There has been the usual

amount of fall seeding done and it is looking well, although too early to report on some late seeded fields. Very few onions raised and those not over half a crop. Potatoes are hardly up to the normal in yield; quality good, but rotting somewhat. The prospect for root crops, celery and other late market-garden crops is fairly good, but hardly up to the average. Apples and pears about half crops; no peaches; grapes ten per cent and cranberries not more than that.

Hubbardston (C. C. COLBY). — Corn is only about 60 per cent of a normal crop. Rowen is a good crop and pasturage holds good. Fall seeding is looking well and is a good catch. Potatoes are rotting badly, but would be an average yield. Apples have dropped badly; no grapes and only a few pears.

Templeton (LUCIEN GOVE). — Indian corn is very much below the average, poorer even than last year. Rowen and fall feed are better than the usual average, the frequent rains proving very beneficial. Less than the usual amount of fall seeding has been done, lateness of haying having put back all other work, but what has been done is in good condition. Early potatoes were a light crop; late ones rotting badly. No celery raised; other market-garden crops below average. Apples light, pears the same; no peaches; grapes light. The high wind of the 16th and 17th blew off a large amount of apples.

Winchendon (ARTHUR STOCKWELL). — Indian corn is about half an average crop. There is a full average crop of rowen and fall feed is in good condition. The usual amount of fall seeding has been done and it is in good condition. Potatoes are first class in yield and quality. The prospect is good for root crops, celery and other late market-garden crops. Fruit of all kinds is a smaller yield than last year.

Gardner (A. F. JOHNSON). — Corn will give about half a crop of grain and stover. Both rowen and fall feed are extra good. The usual amount of fall seeding has been done and it is in good condition. Potatoes are a fair crop of good quality on high land, with some rot on low land. The prospect is good for root crops, celery and other late market-garden crops. There is a fair crop of apples, but they are of poor quality.

Fitchburg (JABEZ FISHER). — Rowen is more than an average crop and fall feed is in good condition. Apples and pears 30 per cent of a full crop; no peaches; grapes 25 per cent. This has been a peculiar season of variable conditions of temperature and moisture, giving premature ripening of some products and delayed maturity of others. A cold summer as a whole.

Bolton (H. F. HAYNES).—Indian corn is about 25 per cent of a normal crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is looking well. Onions are about half a crop. Potatoes are a three-fourths crop of good quality. Root crops, celery and other late market-garden crops are little grown. Apples 5 per cent; cranberries small yield, possibly half a crop; grapes good; no peaches and few pears.

Worcester (S. A. BURGESS).—Corn is about one-fourth of a normal crop. Rowen is a little above the usual average, as is also fall feed. The usual amount of fall seeding has been done and it is in good condition. Onions are a fair crop. Potatoes are about a two-thirds crop. The prospect is fair for root crops, celery and other late market-garden crops. Apples half a crop; pears a two-thirds crop; peaches one-fourth; grapes fair. The warm weather of the month has improved most crops.

Millbury (HERBERT McCracken).—Indian corn is not over one-third of an average crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is making rapid growth. Onions are from 70 to 80 per cent of a normal crop. Potatoes are an average yield of excellent quality, but are rotting somewhat. The prospect for root crops is good. Apples are only one-third of an average crop since the heavy rain and wind storm; pears a light crop; no peaches; few grapes; heavy crop of cranberries.

Oxford (D. M. HOWE).—Corn is not an average crop, as it is very late. Rowen is above the usual average, and fall feed fully up to it. Fall seeding is looking well. Onions are not much raised. Potatoes made a good yield, but are rotting badly. Root crops promise fairly well, and celery looks well. Apples are a very poor crop; pears fair; peaches, grapes and cranberries all scarce. Farmers are getting high prices for butter, milk, eggs and pork, and also especially for sweet corn if good.

Mendon (J. J. NUTTER).—Indian corn is below an average crop. Rowen and fall feed are up to the usual average. Fully the usual amount of fall seeding has been done, and it is looking well. Onions are not much grown. Potatoes made a very good yield and are of good quality if sound, but are rotting badly. The prospect for root crops, celery and other late market-garden crops is very good. There is a very light crop of all fruits except pears.

Blackstone (O. F. FULLER).—Indian corn is backward and frost has damaged some fields. Fall feed is up to the usual average and a good crop of rowen has been secured. The usual amount of fall

seeding has been done. Onions are little raised. Potatoes are about an average crop, except that rot has injured them somewhat. The prospect is good for root crops, celery and other late market-garden crops. Fruit of all kinds made short yields.

MIDDLESEX COUNTY.

Framingham (J. S. WILLIAMS). — The warm, dry weather of September has helped corn, but less than a normal crop will be harvested. There is a good rowen crop on early cut fields and fall feed is unusually good. Not much fall seeding has been done as yet, but good catches are reported on August seeded fields. The onion crop is the lightest and poorest for years, with here and there a good patch. Potatoes will compare favorably with the normal in yield and quality, but there is considerable complaint of rot. The outlook for beets, carrots, parsnips and celery is good for fair crops and good prices. All fruits, especially pears, are a short supply and poor quality.

Sudbury (E. W. GOODNOW). — The corn crop compares unfavorably with the normal. Rowen and fall feed are about the usual average. The usual amount of fall seeding has been done and it is looking well. The onion crop will be about normal. Potatoes are below the average in yield, but are of excellent quality. The prospect for root crops, celery and other late market-garden crops is favorable. Apples, pears, peaches and grapes have turned out poorly this season, but cranberries are a fair crop.

Marlborough (E. D. HOWE). — Indian corn is away off in condition and not 10 per cent of the crop will ripen. Rowen and fall feed are above the usual average. The usual amount of fall seeding has been done and is in first-class condition. Onions are little raised but the crop is about normal. Yield of potatoes 80 per cent, quality 75 per cent; considerable rot reported. The prospect for root crops, celery and other late market-garden crops is now good, but if frost comes soon much damage will ensue. Apples half a crop; pears three-fourths; no peaches; grapes half a crop; cranberries 20 per cent.

Stow (G. W. BRADLEY). — Indian corn is about as nearly a failure as is possible. Rowen and fall feed are better than for some years. Quite a good deal of fall seeding has been done and it is looking finely at present. Onions are a failure in this vicinity. Potatoes are not a good yield and are rotting badly in some places. There are a few apples, but that is about all in the fruit line.

Westford (J. W. FLETCHER). — Indian corn is a very poor crop. Rowen and fall feed are up to the usual average. Not much fall seeding has been done as yet. Potatoes are rather below the normal in yield but are of good quality. The prospect is good for all kinds of fruit.

Dunstable (A. J. GILSON). — The corn crop is away below the normal. Rowen and fall feed are above the usual average. Very little fall seeding has been done as fall work is behind at this time. The onion crop is light. Potatoes are an uneven crop, on some farms more than normal and on others very light; rot has appeared on nearly all fields, but otherwise the quality is good. The few root crops raised promise well. Apples are a light crop; no pears or peaches; grapes and cranberries few.

Tewksbury (GEO. E. CROSBY). — Indian corn will be about one-third of a normal crop. Rowen and fall feed are above the usual average. The usual amount of fall seeding has been done and is in good condition. Yield of onions not quite normal but quality good. Potatoes are below the normal in yield and quality owing to rot. The prospect for root crops, celery and other late market-garden crops is very good. There will be very light yields of all kinds of fruit.

Billerica (GEO. P. GREENWOOD). — Indian corn is very late and below the average in promise. Rowen and fall feed are up to the usual average. Onions are below the average in yield. Potatoes are less than an average crop and are rotting. The prospect is good for root crops, celery and other late market-garden crops. Fruits of all kinds are very poor crops, with the exception of pears and cranberries, which are fair.

Carlisle (E. J. CARR). — Corn is a very poor crop and did not ear out well. Rowen and fall feed are about average. Very little fall seeding has been done as yet and it is in poor condition. Onions are little raised. Potatoes made a fair yield of good quality, with some rot. Root crops generally will make a poor yield. Apples few; no pears, peaches or grapes; very small yield of cranberries.

Lincoln (C. S. WHEELER). — What corn there is will be 40 per cent below the normal in yield. Rowen and fall feed are up to the usual average. Less than the usual amount of fall seeding has been done, but it is in fair condition. Onions are an average crop. Potatoes are a three-fourths crop of fair quality, except that there is some rot. The prospect is fair for root crops, celery and other late market-garden crops. Apples are a small crop of poor quality; pears average; grapes short; cranberries below average.

Wakefield (CHAS. TALBOT). — Indian corn is not more than 70 per cent of a normal crop. Rowen is a long way beyond anything for years. Very little seeding has been done as yet and some are breaking up land now for the purpose. Onions are rather late and about 80 per cent of the usual crop. There is a large crop of good potatoes with very little rot. Root crops, celery and other late market-garden crops promise to be fully up to the average. Apples scarce; pears plenty; peaches small crop; grapes half a crop; cranberries 75 per cent of usual crop; fruit running small.

Stoneham (J. E. WILEY). — Indian corn is not much raised. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, but it is too early to state as to condition. Onions are about half a crop. Yield of potatoes good and quality good, but there is some rot. The prospect for root crops, celery and other late market-garden crops is fair. Apples poor; pears good; no peaches; grapes poor.

Arlington (W. W. RAWSON). — Rowen and fall feed are up to the usual average. Onions are a fair crop. Potatoes are a very poor crop in yield and quality. The prospect is good for root crops, celery and other late market-garden crops. There is a poor crop of apples, pears, peaches and grapes. If the fall is late such crops as remain will be up to the average.

Weston (H. L. BROWN). — Corn is very poor, some fields will give half to two-thirds of the normal crop and others hardly any. On early cut fields there is a good crop of rowen, but much of the haying was late and will not give rowen worth cutting; fall feed fairly good. Little seeding has been done as yet, but what I have seen is looking well. The yield of potatoes is on the whole below the normal and they are rotting. Roots are rather late owing to cold, as is celery, but both are looking well. Apples a very poor crop; pears a fair crop; no peaches; few grapes. Corn for the silo is not much more than half a crop.

ESSEX COUNTY.

Salisbury (WESLEY PETTENGILL). — Indian corn will not be more than half a crop unless frost holds off very late. Rowen and fall feed are above the usual average. Not much fall seeding has been done in this vicinity. Onions are little raised. Potatoes are about two-thirds of a normal crop in yield but are of good quality. Cabbages and turnips are looking well; celery not much raised. Apples are better than usual for an off year; pears good; peaches none; grapes and cranberries very few. Potatoes are rotting somewhat, about 25 per cent in some fields, not so much in others.

Groveland (A. S. LONGFELLOW). — Indian corn will be about half a crop of poor quality. Rowen and fall feed are as good or better than usual. About the usual amount of fall seeding has been done and it is in satisfactory condition. Potatoes yield well but are rotting badly. Root crops are looking well. There are very few fall apples, but about half a crop of winter varieties; some pears; no peaches or grapes.

Newbury (GEO. W. ADAMS). — Indian corn is about 75 per cent of a full crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done but is a little backward, as many fields were sown late. Onions are about half a crop. Potatoes are a fair crop, but are rotting quite badly. Root crops, celery and late market-garden crops will be somewhat below the average. Apples 25 per cent of a full crop; pears 75 per cent; peaches a failure; grapes not ripening and crop small; cranberries not quite an average and uneven, some beds doing well.

Rowley (D. H. O'BRIEN). — Corn is about half a normal crop. Rowen and fall feed are up to the usual average. Not much fall seeding has been done as yet. Onions are about one-fourth of a normal crop. The yield of potatoes is about normal, but the quality is poor. Apples are about half a crop; other fruits very scarce. The prospect for root crops, celery and other late market-garden crops is about normal.

Andover (M. H. GOULD). — Indian corn is about 20 per cent of a normal crop. Rowen and fall feed are above the average. The usual amount of fall seeding has been done and its present condition is good. Onions are about half a crop. Yield of potatoes good, but many report rot. The prospect is good for root crops, celery and other late market-garden crops. Fruit of all kinds has turned out very poorly.

Wenham (N. P. PERKINS). — Indian corn is but little raised. Rowen is quite good on well manured fields, and fall feed is fair. Farmers are quite late about fall seeding, and considerable is not yet done, with none up as yet. The onion crop is very short with many fields an entire failure and the rest curing down very slowly. Potatoes are rotting very badly, some fields almost a failure; extra crop promised but for rot. If the season should hold out well some root crops will be much improved, but as a whole they will be light. Apples are a disappointment, being quite small and dropping badly; pears are good; no cranberries or peaches.

NORFOLK COUNTY.

Randolph (R. A. THAYER). — Indian corn is about half a normal crop. Rowen and fall feed are up to the usual average. About the usual amount of fall seeding has been done and it is looking well. Onions are about an average crop. Potatoes are an excellent crop, but are rotting badly. Root crops are promising and celery good; late corn poor. Market-garden crops have been good with some exceptions and have brought good prices. Squashes a poor crop; tomatoes not ripening as usual. Apples one-third of a crop; pears good; no peaches and grapes.

Stoughton (C. F. CURTIS). — Indian corn is about half a crop. Fall feed is up to the average, but rowen is only about two-thirds of an average crop. Fall seeding is behind from the press of work owing to the peculiar season. Potatoes yielded heavily, but the rot will spoil half of them. Apples half a crop; pears half a crop; peaches very poor; grapes half a crop and cranberries one-third.

Westwood (H. E. WEATHERBEE). — Corn is two weeks late and not filled out well. Rowen and fall feed are better than usual. There has been the usual amount of fall seeding done and it is looking well. Onions are a normal crop. Potatoes have rotted badly and are not of very good quality. Cabbages are not looking very well. There is a good crop of pears and grapes.

Norfolk (A. D. TOWNE). — We have not a field of corn where the ears have matured. Rowen and fall feed are up to the usual average. Seeding is not all done yet, but what has been done looks very well. Potatoes are about an average crop in yield and quality. Root crops will generally be good. Apples are small and wormy; pears light crop; no peaches; cranberries a good crop, but not colored well.

Franklin (C. M. ALLEN). — Indian corn is 90 per cent of a full crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it looks very well. Potatoes are a good crop in yield and quality, but are rotting somewhat. The prospect is that root crops, celery and other late market-garden crops will be below the average. Apples very few; pears light; no peaches; grapes few; cranberries light to medium.

BRISTOL COUNTY.

Easton (H. M. THOMPSON). — Indian corn is much below an average crop. Rowen and fall feed are up to the usual average. Weather conditions are favorable to fall seeding and about the

usual amount will be accomplished. Onions are little grown. Potatoes have done better than almost any other vegetable, but some complain that they are rotting somewhat after being dug and do not promise to keep very well. The prospect is that root crops, celery and other late market-garden crops will be fair crops, but hardly up to the average. There are very light crops of all fruits.

Mansfield (WM. C. WINTER). — Corn is below a normal crop, being late and the ears poorly filled out. Rowen is above an average crop and fall feed is about average. Little seeding has been done; that put in early is doing well, but late sown seeds are lying dormant from drought. Onions little raised, but a normal crop. Potatoes are below the normal in yield, but are of better quality than usual. Prospect is good for root crops, celery and other late market-garden crops with rain. Apples about half a crop; pears two-thirds; no peaches; grapes poor; cranberries fair.

Attleborough (ISAAC ALGER). — There will not much corn mature. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is in good condition. Potatoes are a full average crop in yield and quality. The prospect for root crops, celery and other late market-garden crops is fair. Apples, pears, peaches, grapes and cranberries will all give very small crops.

Berkley (R. H. BABBITT). — Corn is two weeks late and will be much below the average in yield. Rowen and fall feed are about up to the usual average. Less than the usual amount of fall seeding has been done, but it is looking very well. Onions are much below an average crop. Potatoes have yielded well, but have rotted badly. The prospect is very good for root crops, celery and other late market-garden crops. Apples poor; pears plenty; no peaches; grapes few; cranberries an average crop.

Westport (A. S. SHERMAN). — On account of the cold season corn is late and a frost would injure it badly. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it looks well. Potatoes are of good quality and the crop would have been large but for the rot. Turnips and cabbages promise well. Pears were plenty but decayed badly; all other fruit scarce.

PLYMOUTH COUNTY.

Marshfield (J. H. BOURNE). — Indian corn is a poor crop, but should frost hold off for ten days it would add materially to the yield. Rowen and fall feed are up to the usual average. The

usual amount of fall seeding has been done and the present outlook is encouraging. Onions are about three-fourths of a normal crop. Potatoes are below the normal in yield and of fair quality, but with much rot. The prospect is favorable for root crops, celery and other late market-garden crops, but they will be less than usual. Apples and cranberries uneven in yield; pears good; grapes poor.

West Bridgewater (C. P. HOWARD). — Corn is a very poor crop, not half a normal one. Rowen is a very heavy crop. There has been a large amount of fall seeding done and it is doing well. Potatoes are rotting badly on rich land and the quality is best where only fertilizers are used. Root crops, celery and other late market-garden crops are doing very well. There is a light crop of apples; no peaches; plenty of pears; small crop of grapes, and but a light crop of cranberries.

Pembroke (NATHANIEL MORTON). — Indian corn is below a normal crop. Rowen and fall feed are up to the usual average. Not as much fall seeding as usual has been done, but it is in fair condition. Onions compare favorably with a normal crop. The yield of potatoes is fair, but quality poor and they are inclined to rot. The prospect is good for root crops, celery and other late market-garden crops. Apples a small crop and poor in quality; pears abundant; no peaches; grapes a small crop; cranberries a fair crop.

Plympton (WINTHROP FILLEBROWN). — Indian corn is about 65 per cent of a normal crop. Rowen and fall feed are better than usual. About the usual amount of fall seeding has been done and the showing is good. The onion crop is very good. Potatoes are giving a normal yield where they came up well. The prospect is good for root crops, celery and late market-garden crops. Apples are fair; pears good; peaches poor; grapes very few. Cranberries have turned out in excellent shape on bogs protected from late spring frosts.

Carver (J. A. VAUGHAN). — Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done and it is in good condition. Onions are a fair crop. Potatoes have made an average yield but show some rot. The prospect is good for root crops, celery and other late market-garden crops. But few apples and pears; no peaches and a small crop of cranberries.

Mattapoisett (E. C. STETSON). — Indian corn will not give over two-thirds of a normal crop. Rowen and fall feed are better than the usual average. There has been very little seeding done as yet in this section. Onions are a very good crop, but are little raised.

Potatoes have made a good yield, but there is some complaint of rot. The prospect is very good for root crops, celery and other late market-garden crops. Apples are a light crop; pears good; no peaches or grapes; cranberries good.

BARNSTABLE COUNTY.

Falmouth (D. R. WICKS). — Corn is about up to the normal but is a little late. Rowen and fall feed are up to the usual average, especially fall feed. Seeding is completed and is in fine growing condition. The onion crop is normal where the seed germinated. Potatoes have made a fair or average yield with fine quality and little rot. All root crops bid fair to give good crops. Some orchards show plenty of apples, while others have very few, about half a crop of not very good quality. Pears plenty; peaches half a crop; very few grapes; cranberries half a crop.

Mashpee (W. F. HAMMOND). — Indian corn is below an average crop. Rowen and fall feed are about average. There has not been the usual amount of fall seeding done. Onions are only about half a crop. There is an average yield of potatoes, but they are rotting. Root crops are looking well and will be above average. Apples, pears and grapes half crops; cranberries not over one-third of a crop.

Harwich (A. N. DOANE). — Indian corn compares favorably with a normal crop. Rowen and fall feed are not up to the usual average. Not much fall seeding has been done. Onions are about an average crop. Potatoes are above the normal in yield and quality. The prospect is good for root crops, celery and other late market-garden crops. Apples, pears and grapes poor; no peaches; half a crop of cranberries.

Eastham (J. A. CLARK). — Indian corn is not much raised. Rowen and fall feed are up to the usual average. Fall seeding is not practised to any great extent. Onions are little raised. Potatoes are very good, both in yield and quality. The prospect is good for root crops, celery and other late market-garden crops. Apples, pears and cranberries good.

Truro (D. E. PAINE). — Indian corn is not raised. Rowen and fall feed are not up to the usual average. Very little fall seeding has been done. Onions are little raised. Potatoes are above the average in yield and quality. Root crops, celery and other late market-garden crops are very little raised. Apples are a good crop and cranberries a fair one.

BULLETIN OF
MASSACHUSETTS BOARD OF AGRICULTURE.

SOME IMPORTANT SCALE INSECTS.

By DR. H. T. FERNALD, *Professor of Entomology, Massachusetts Agricultural College.*

During the past fifteen years injuries to plants, shrubs and trees by scale insects have become very noticeable, and several of the worst pests belonging to the group have made their appearance in this country and have caused the loss of millions of dollars, often because their small size enabled them to escape notice until it was too late to save the plants they had attacked. The destruction caused by these insects has attracted much attention recently, and in Massachusetts the demand for information concerning them has exhausted the entire edition of two previous articles on this subject, published in the Crop Report.* Since these articles were written additional facts about some of these pests have been learned, and we now know better how to keep them in check.

THE SAN JOSÉ SCALE.

(*Aspidiotus perniciosus* Comst.)

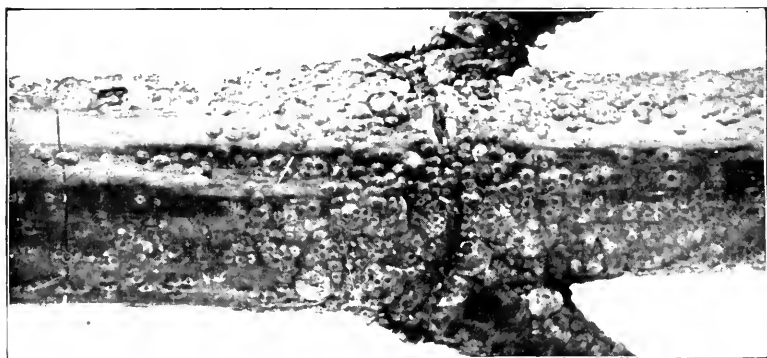
The home of this, perhaps the worst scale pest, was long unknown, but it now seems probable that it is a native of China. In the United States it was first discovered in California, where it seems to have appeared about 1870. In 1880, when it was first described, Professor Comstock, after giving the detailed description of the insect, wrote: "From what I have seen of it, I think that it is the most pernicious scale insect known in this country," and this opinion has certainly been sustained by its subsequent history in the United States.

In 1893 the scale appeared in Virginia, having probably been received there from New Jersey, and two nurseries in the latter State proved on examination at this time to be infested with it. These nurseries had been experimenting with plum stock from

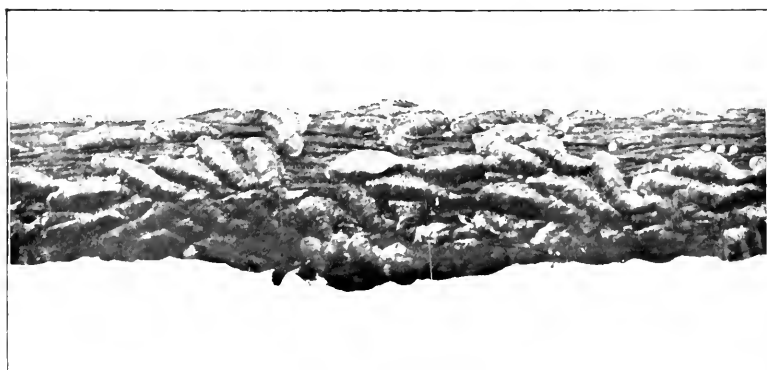
* May, 1901, and June, 1902.



The Scurfy Scale.



The San José Scale.



The Oyster-shell Scale.

THREE COMMON ORCHARD SCALES. — Twice Natural Size.

California in the hope of finding a variety which would be "curculio proof," and the scale was probably brought east on this stock and spread all through the nurseries referred to, both of which did a large wholesale business in the eastern and middle States. Stock sent out was therefore infested by this scale, which spread in the nurseries to which it was sent, and thence went out in the retail sales to all parts of the country. With such methods of distribution it is no wonder that this scale is now working destruction in nearly every one of the United States, and in Canada and foreign countries. In Massachusetts it is now known to occur in over a hundred cities and towns, often causing much loss, and it is probably present in many other places from which it has not as yet been reported.

Food Plants.

This scale seems able to live on almost any plant, but is of little importance on those which die to the ground each winter, as, when this happens, any scale on the dead part also dies, and it does not appear to locate below the ground. It seems to prefer for its food plants of the botanical family Rosaceæ, for it thrives best and becomes injurious to plants of that group, with a few exceptions, more quickly than on those of any other group. As the Rosaceæ includes most of our fruit trees, small fruits, roses, thorns and Spiræas, and as the scale is also a serious enemy to currants, gooseberries and grapes, nearly all our fruitbearing trees and plants are included in the list of its favorite food plants. It is also found on elms, maples, birches, willows, poplars and many other trees and shrubs, and has once been reported on spruce and arbor vitæ, but in these cases it is doubtful if it often thrives sufficiently to kill the plant it is on. When it occurs on such food plants, however, it is no less a menace, as from them it may spread to other trees and shrubs in the neighborhood, less resistant to its attacks.

Description and Life History.

The adult female insect is lemon yellow in color but is covered by a hard dead scale, which is circular in outline, slightly raised in the centre, forming a sort of nipple, and is about the size of a pin head. Beneath the scale the insect lies, with its beak thrust into the plant till it reaches the sap on which it feeds. The scale being dead and closely fitting the surface of the plant at its edge, it is impossible to reach and kill the insect beneath by any of the milder washes.

The winter is passed under the scale in this condition, but the very young and adult insects appear to die during this time. In

the spring those which are alive begin sucking the sap, and about the first of June become adult. Reproduction now begins, the young being born alive at the rate of three or four or more nearly every day for about a month, after which the parent dies. By this time the first-born young are now adult and beginning to produce young, however, so that young scale insects may be found at almost any time from about the fifteenth of June till winter stops their

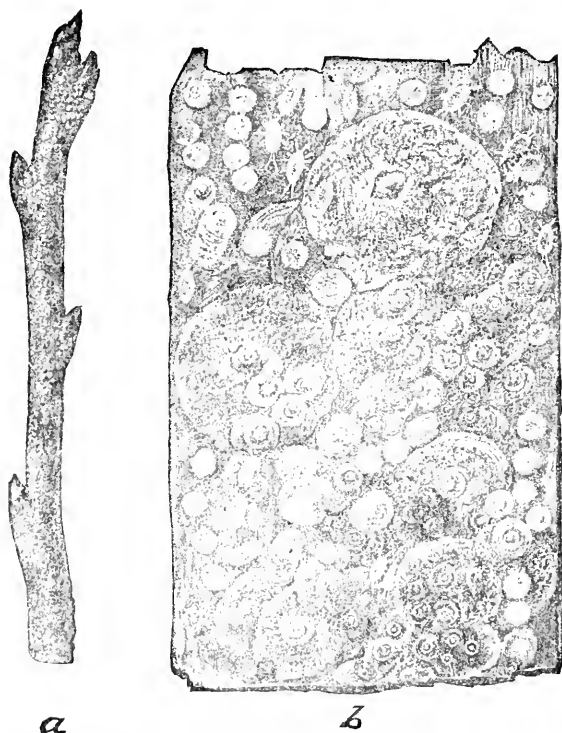


FIG. 1. — San José scale: *a*, twig showing scale, natural size; *b*, portion of bark showing crawling young and scales in various stages. (Howard and Marlatt, Bull. 3, N. S., Div. of Ent., Dept. of Agr.)

production, though they are more abundant at certain times during this period than at others.

That an increase in this way must result in the production of an enormous number of new scales is evident. It has been calculated that if all the progeny of a single female which begins breeding in June should survive and reproduce in their turn, the number of female descendants of this female when winter stops reproduction would be 1,608,040,200, and while this is never the case, it is not strange that with even a small proportion of this number of insects sucking the juices from the plant severe injury should ensue and often cause its quick death.

The young scales are very small, oval, yellow insects, with six legs which they use in crawling about in search of a place upon which to settle. It is probable that while they may move about for four or five days before they locate permanently, in most cases it is less than two days.

Upon finding a satisfactory place on which to locate the young insect inserts its beak in the plant and begins to suck its juices, while fine waxy threads appear on the surface of the body and soon unite to form the covering scale. This is circular in outline, white in color and highest in the middle. About ten days later the insect moults, and adds its moulted skin to this scale which has now become darker, giving the entire scale thus formed a gray color with a yellowish or whitish centre. Shortly after this, the female insects moult again, adding the moulted skin to the scale as before, and now soon become adult.

Distribution.

If while the young scale insects are crawling about a bird lights on the tree, it is not unusual for one or more of them to crawl on to its feet and thus be carried some distance when it flies, before they can crawl off again at the bird's next resting place, thus establishing them in some other portion of the town or city. The larger insects, also, aid in scattering these insects in this way, while sudden gusts of wind may carry the young from tree to tree in an orchard.

The most usual method of distribution, is by means of nursery stock infested with this pest, each infested plant sent out becoming a centre from which this insect spreads in all directions.

Enemies.

The chief foes of the San José scale are the lady-bugs or lady-birds. These are small beetles nearly circular in outline and very convex. One of the most important of these is the "Twice-stabbed lady-bug," which is about an eighth of an inch long, shining black, with a small red spot on each side. A much smaller black beetle, known as *Pentilia misella*, also feeds upon the scale.

Recently a lady-bug very similar to the "Twice-stabbed lady-bug" has been found in China, destroying the San José scale there, and colonies of this insect have been brought to this country by the United States Department of Agriculture in the hope that it may be of equal value here. The results of this experiment cannot now be determined as sufficient time has not yet elapsed.

Several parasites are also known, but they have not thus far shown their ability to control the scale, and a fungous disease

which also attacks it has failed to accomplish much. Thus far, in this country, treatment by man has proved necessary, these natural enemies failing to do more than merely hold the insect slightly in check.

Treatment.

Many methods of treatment for the scale have been tested and a number have proved to be of more or less value. The great difficulty in treating infested plants with sprays is that, as the in-

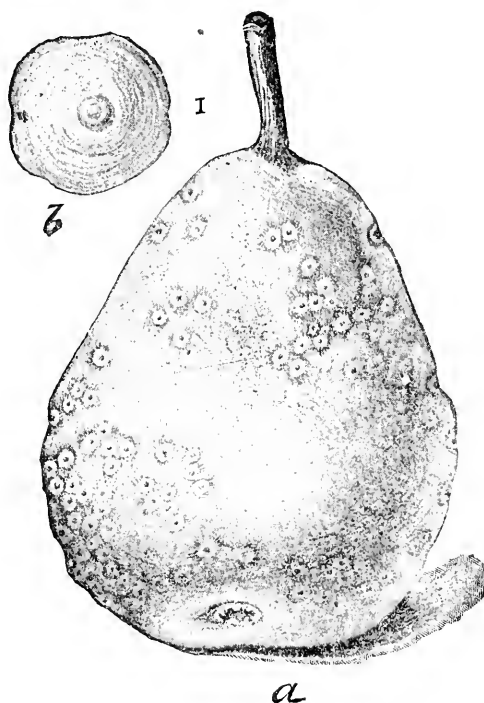


FIG. 2.—San José scale on pear: *a*, natural size; *b*, much enlarged. (Howard, Circ. 3, 2d. ser., Div. of Ent., Dept. of Agr.)

sect obtains its food from the juices of the plant, no arsenical poison is of the slightest use, and it must be killed by something which touches it. This is extremely difficult, both because the insect is so small, even when full grown, and because the scale over it is very hard and resistant. The only time at which the insect can be reached with mild sprays, such as kerosene emulsion, is when it is crawling and before it has formed a scale. But new young are constantly appearing from about the fifteenth of June till late in the fall, so that if this method were adopted, spraying would have to be repeated every week during at least four months.

It is therefore preferable to use stronger insecticides while the trees are dormant in winter, and the best results are obtained by spraying in February and March and even later, till the buds begin to open.

Fumigation.

For small trees which it is possible to cover with an air-tight tent, fumigation is the most reliable treatment which can be used, as the gas will reach all the insects when a spray would probably fail to do this; but the cost of a tent increases so rapidly with its size that only small trees can profitably be treated in this way. In the case of nursery stock, however, this is the best treatment to make use of. Certain cases have been reported in which destruction of the scale by fumigation has apparently not been a success. In every case, this seems to have been due to failure in properly carrying out the directions for the work. Either the tent or box used was not air-tight, or the potassic cyanide was of the 50 per cent strength usually sold by druggists instead of the 98 per cent or 99 per cent strength necessary, or the time during which the fumigation was continued was not sufficient. Failure to meet any one of these requirements would give a failure in the results.

Spraying.

Of the many materials used for spraying for the San José scale few are of much value, and none may be expected to destroy all the scales, as some will in all probability fail to be touched. On the thoroughness of the work, then, depends the success of the treatment.

If but a few trees are to be sprayed it is probable that potash whale-oil soap will cause the least trouble to apply. At the Hatch Experiment Station at Amherst several brands of this soap were tested in 1902, and the best results were obtained with Bowker's Tree Soap. Two pounds of this soap were dissolved in each gallon of water used, and the solution was sprayed warm, using an ordinary spray pump and a Vermorel nozzle with very small opening, giving a fine mist. All parts of trunk and limbs were covered by the spray, treatment of any portion being stopped the moment the spray began to drip or run down the bark.

Crude petroleum and kerosene were also used in the form of a mechanical emulsion with water. This emulsion was produced by the pump (Kerowater), which has two tanks, one for oil and one for water, with a line of hose from each to the nozzle where the two streams combine and are forced out together, the proportion of each being regulated by attachments of the pistons to the pump

handle. The results with both of these materials were less satisfactory than with whale-oil soap. The strength of oil in the oil-water mixture should have been 20 per cent, but it varied greatly from that, and the whole apparatus was heavy and awkward to handle. As spraying with these materials requires a two-tank pump, it seems not to be the best method of treatment for small orchards or infested areas.

The lime, salt and sulphur wash, successfully used on the Pacific coast for the scale, when first tried in the east proved a failure. Recently it has been tried again and with generally excellent results. At the Hatch Experiment Station it proved to be the best of over a dozen different treatments tried. It is somewhat difficult to prepare, however, which is its greatest drawback.

To make it, boil 10 pounds of fresh stone lime and 20 pounds of sulphur with 20 gallons of water in a farmer's kettle for an hour and a half, stirring frequently. Slake 30 pounds of lime in hot water and stir in 15 pounds of salt till the last has dissolved. Now add the lime and salt to the lime and sulphur, and heat for half an hour. Strain this mixture through burlap into the spray pump and apply to the trees while it is warm. A fuller description of the methods of making and applying these materials, together with their cost, has been published as Bulletin 86 of the Hatch Experiment Station, Amherst, Mass., which can be obtained by request. It now seems probable that the salt can be omitted from this mixture without affecting the result injuriously.

Where a tree is quite thoroughly covered with the scales it is of little use to try to save it. The sooner it is destroyed the better, for the sake of the other trees around.

THE OYSTER-SHELL SCALE.

(*Lepidosaphes ulmi* Linn.)

This insect has been in the United States more than a hundred years, and is generally present in orchards, and on many of our ornamental and forest trees and shrubs. The scale is much larger than the San José scale and very different in form, being pointed at one end, rounded at the other, quite long, and frequently curved to one side (Fig. 3 *b*) and is brown or gray in color.

If one of these scales be lifted in the fall or winter, beneath it from twenty to one hundred yellow eggs will be found, besides the dead body of the mother insect under the pointed end of the scale. These eggs hatch about the first of June each year, and the tiny yellow young crawl about for a few days, seeking places at which to fix themselves. They then settle down and plunge their beaks into

the bark to the sap and begin to feed. A covering scale is soon formed, protecting the insect beneath, and in the fall the eggs are deposited there, after which the insect dies. There appears to be but one brood each year in Massachusetts.

This scale has quite a list of food plants, including the apple, pear, plum, quince, poplar, willow, ash, lilac and elm. Individual trees are frequently killed by it, but it is very rare that it spreads to the trees and shrubs around, killing them all, as is so often the

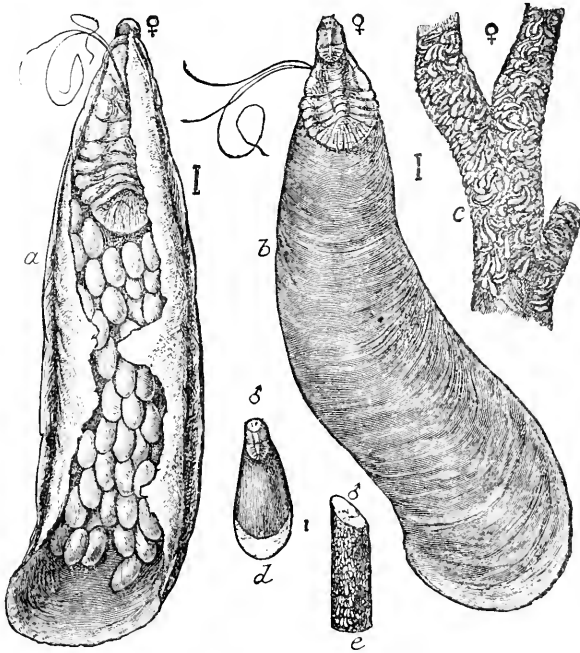


FIG. 3.—Oyster shell scale: *a*, under side of female scale, showing eggs; *b*, upper side of same, both much enlarged; *c*, female scales on a branch, natural size; *d*, male scale, much enlarged; *e*, male scales on branch, natural size. The fine lines to the right of *a*, *b* and *d* show the real length of the scales. (Howard, U. S. Dept. Agr., Yearbook, 1894.)

case with the San José scale. It has enemies and parasites which aid in keeping it in check, and its low annual rate of increase renders it much less to be feared than the last-named pest.

Treatment.

Any treatment effective for the San José scale will also destroy this insect, but its life history is such as to provide an opportunity for easier methods as well. As all the young hatch about the same time—about the first of June—two sprayings at this

season, about ten days apart, with kerosene emulsion or Bowker's Insect Emulsion should be sufficient to keep this insect under entire control. Kerosene emulsion is made as follows: $\frac{1}{2}$ pound hard soap, shaved fine, 1 gallon soft water, 2 gallons kerosene. Dissolve the soap in the water, which should be boiling; remove from the fire and pour it into the kerosene while hot. Churn this with a spray pump till it changes to a creamy, then to a soft, butter-like mass. Keep this as a stock, using one part in nine of water.

Bowker's Insect Emulsion comes ready prepared, needing only to be mixed with water, and is therefore convenient for those who do not wish to prepare the kerosene emulsion for themselves.

THE SCURFY SCALE.

(*Chionaspis furfura* Fitch.)

This is also a common scale in the United States though it is apparently less common in Massachusetts than farther south.

The female is somewhat smaller than that of the oyster-shell scale, but is broader and of a dirty white color (Fig. 4, *a* and *c*). The male scale (Fig. 4, *b* and *d*) is much smaller and narrower.

This insect, like the last, lays eggs beneath the scale in the fall. These eggs, which are from ten to seventy-five in number, are purplish in color and hatch about the first of June into purplish young, which crawl about, as do those of the

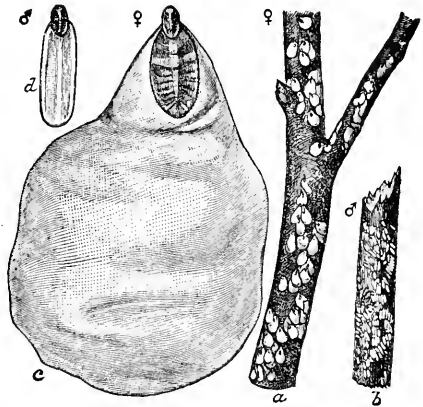


FIG. 4. — Scurfy scale: *a*, female, *b*, male scales natural size on twigs; *c*, female scales, much enlarged; *d*, male scale, much enlarged. (Howard, U. S. Dept. Agr., Yearbook, 1894.)

oyster-shell scale, for a few days before settling down to feed. The remainder of the life history is similar to that of the last-named insect, and the treatment for both is the same.

The scurfy scale occurs on the apple, pear, quince, peach, currant, Japan quince, mountain ash and many other plants, but is not generally so abundant as to endanger the life of the plant.

LECANIUMS OR SOFT SCALES.

These scales are very different in appearance from those already considered, being comparatively soft and easily crushed. Moreover, they are quite large as compared with most of the hard or "armored" scales, and when adult are very convex, many having a nearly hemispherical form (Fig. 5). They feed on the juices of many plants, including palms and ferns in greenhouses, and give trouble to fruit growers on plum and other fruit trees, and are often serious pests on maples, oaks, tulip trees, etc.

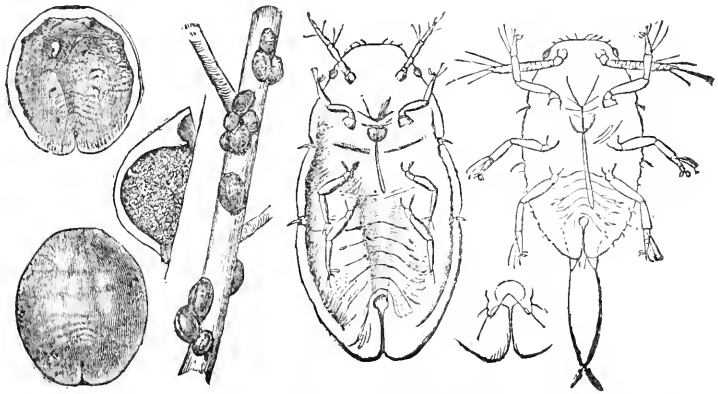


FIG. 5.—Peach soft scale: female scales on twig, natural size; upper side of a scale in upper left corner; under side of same in lower left corner; scale cut lengthways in middle of left side; young, and full grown but still crawling scales on right side; all much enlarged except the scales on the twig. (Howard, U. S. Dept. Agr., Yearbook, 1894.)

In many cases nature has established a sort of equilibrium for these insects which, after two or three years of great abundance, are overcome by their foes and are not again abundant enough to be noticed for a number of years. Where treatment seems to be necessary, however, it must be adapted to the particular kind of soft scale concerned, as the best treatment for one species might not prove successful for another. In such a case, therefore, the particular kind to be treated and the best application to use should be learned by sending specimens to the experiment station of the State.

These scales, like the plant lice, produce a sweetish liquid which falls from their bodies to the leaves, stems and ground, where it dries somewhat, becoming sticky. Of this "honey dew" ants are very fond, and often visit infested trees in large numbers to feed upon it. It also forms a good place for the growth of a fungus, which turns it black, giving to the leaves and stems it is on a smutty appearance.

SUMMARY.

The San José scale is now generally distributed throughout the United States.

It feeds upon nearly all kinds of plants but appears to be most destructive to those of the family Rosaceæ and a few others.

Those individuals which are alive in the spring become adult and begin to produce young about the middle of June, and young are continually being produced from that time till after frosts come in the late fall.

The enormous number of young produced quickly causes severe injury or even death to infested trees.

The crawling young are distributed by birds, insects and winds. Scales in all stages are distributed on infested nursery stock.

Though this pest has a number of enemies none have as yet shown themselves able to keep it under control.

Treatment of small plants and trees is most successful by fumigation. This is not practicable for large trees on account of the cost, and spraying must be resorted to. This should be done between the first of February and the time the buds open.

The best spraying material for use on a small number of plants is probably Bowker's Tree Soap, because it is easy to prepare and needs no special kind of apparatus.

On a larger scale the lime, salt and sulphur wash has proved more effective but is rather difficult to prepare.

When a tree is covered with the scale it is hardly worth treating and should be destroyed at once.

The oyster-shell scale young hatch about the first of June, and may be destroyed at this time by spraying twice with kerosene emulsion or Bowker's Insect Emulsion.

The young of the scurfy scale also hatch about the first of June, and the best treatment for them is the same as for the oyster-shell scale.

Any of the treatments suggested for the San José scale will also destroy the oyster-shell and scurfy scales.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF OCTOBER, 1903.

ISSUED BY

J. LEWIS ELLSWORTH,
SECRETARY STATE BOARD OF AGRICULTURE.



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CROP REPORT FOR THE MONTH OF OCTOBER, 1903.

OFFICE OF STATE BOARD OF AGRICULTURE,
BOSTON, MASS., NOV. 2, 1903.

Bulletin No. 6, Crop Report for the month of October, is herewith presented as the final issue of the season. We desire to thank our correspondents for the assistance they have so freely given, making the publication of these bulletins possible, and we shall look to them another year for the same measure of effective and interested work.

The special articles printed this year have been: Bulletin No. 1, "Fruits for the home garden: varieties and culture," by Prof. F. A. Waugh; Bulletin No. 2, "Summer management of the dairy herd," by Prof. F. S. Cooley; Bulletin No. 3, "Bee keeping: its pleasures and profits," by Dr. James B. Paige; Bulletin No. 4, "The management of poultry on small farms," by John H. Robinson; and Bulletin No. 5, "Some important scale insects," by Prof. H. T. Fernald. Particular attention is called to the article on "The prevention of some fungous diseases attacking greenhouse crops," by Dr. Geo. E. Stone, which is printed at the close of this bulletin.

PROGRESS OF THE SEASON.

The October returns of the United States Department of Agriculture (Crop Reporter for October, 1903) show the average condition of corn October 1 to have been 80.8, as compared with 80.1 a month earlier, 79.6 on Oct. 1, 1902, 52.1 at the corresponding date in 1901, and a ten-year average of 77.7.

The preliminary estimate of the average yield per acre of spring wheat is 14.4 bushels, and the average quality was 85.5, as compared with 87.7 a year ago.

The preliminary returns indicate an average yield of 28.4 bushels of oats per acre, as compared with 34.5 bushels a

year ago, 25.1 in 1901, and a ten-year average of 27.8. The average of quality was 79.9, against 86.7 in 1902 and 83.7 in 1901.

The preliminary estimate of the yield per acre of barley was 26.4 bushels, against 29 a year ago, 24.7 in 1901, and a ten-year average of 23.8. The average for quality was 85.4, against 87.3 last year and 89.2 in 1901.

The preliminary estimate of the yield per acre of rye was 15.4 bushels, against 17 last year, 15.1 in 1901, and a ten-year average of 14.8. The average for quality was 88.4, against 91.8 last year and 89.4 in 1901.

The average condition of buckwheat on October 1 was 83, as compared with 91 a month ago, 80.5 on Oct. 1, 1902, 90.5 in 1901, and a ten-year average of 79.7.

The average condition of potatoes on October 1 was 74.6, against 84.3 a month previous, 82.5 on Oct. 1, 1902, 54 in 1901, and a ten-year average of 73.1.

The average condition of tobacco on October 1 was 82.3, as compared with 83.4 a month earlier and 82.9 on Aug. 1, 1903.

The average condition of rice on October 1 was 90.6, as compared with 93.6 a month earlier and 92 on Aug. 1, 1903.

The average condition of cotton on September 25 was 65.1, as compared with 81.2 a month earlier, 58.3 on Sept. 25, 1902, 61.4 in 1901, and a ten-year average of 67.4.

In Massachusetts the average condition of corn October 1 was given as 52 : the average yield of oats as 31.1, and the average quality as 91 : the average yield of rye as 13.7, and the average condition as 92 ; the average condition of buckwheat as 74 ; the average condition of tobacco as 80 ; the average condition of potatoes as 77 : and the average condition of apples as 68.

MASSACHUSETTS WEATHER, 1903.

[Compiled from data furnished by the New England Weather Service.]

The weather of January was of the usual mid-winter type. Several severe storms passed over the State, and frequent severe gales were experienced along the coast. The weather was somewhat milder than usual for January, the mean temperature being about 1° above the normal. There were

no unusual extremes of temperature, and the usual warm period, or "January thaw," was absent. The precipitation showed a slight deficiency, as compared with the normal of the month. The snowfall was also rather light, but, owing to the uniform temperature, the ground was generally well covered until the close of the month.

February was marked by rapid and pronounced changes in the weather. A heavy snowstorm, a cold wave, a thaw, thunderstorms and gales of hurricane force were prominent features. The storm of the 16th-17th was unusually severe. It reached all sections with heavy snow, and gales of great violence occurred along the coast. The month was warmer than usual for February, the monthly temperature being about 2° above the normal. The precipitation was also in excess, but the distribution was somewhat irregular. At the close of the month the ground was generally bare of snow.

The weather during March was very pleasant, although unseasonal, and some of its elements were phenomenal and without precedent in a century of authentic meteorological records. The precipitation was largely in excess, the monthly amounts being from $1\frac{1}{2}$ to 2 inches above the normal. The snowfall, was, however, unusually light, and at the close of the month there was none on the ground. The monthly mean temperature was the highest of official record, covering a period of thirty-two years, and averaged 10° above the normal for March. According to authentic records covering a period of a hundred years the month was the warmest of its name within a century.

The weather of April was uneventful, and generally characteristic of the season. The temperature was somewhat in excess, ranging about 1.5 above the monthly normal. The precipitation was near the normal, the departures generally being from one-quarter to one-half below the usual monthly amounts. Generally speaking, April was a pleasant month. At its close the season was estimated to be from a week to ten days in advance of the normal.

May was distinguished by a preponderance of sunny weather and a marked deficiency of precipitation. The temperature conditions presented no unusual features, except some noticeable extremes during the first week of the

month, which ranged from summer heat to winter cold. There was a general freeze on the morning of the 2d. During the third week of the month the temperature conditions were characteristic of mid-summer weather, the mercury ranging well into the 80's. By the middle of the month rain was much needed, and toward the close, vegetation showed the effect of the drought, and streams, lakes and wells were becoming low. The rainfall was from two to three inches below the normal for the month.

During the first three days of June the skies were clear, with summer-like temperatures. During the nine days following the skies were overcast, with the daily temperatures ranging from 4° to 6° below the seasonal average. On the 8th the first rain of the month fell, beginning the breaking of the long drought, which commenced soon after the middle of April. From the 13th to the 25th the weather was characterized by abnormally low temperatures, continuous cloudiness and almost daily rains. The rainfall of the month was unusually large, the amounts ranging from two to three times the normal of June. With slight exceptions during the opening and closing days of the month, the temperature was continuously below the average, and the month, one of the most unpleasant of its name.

The weather of July was uneventful, and, for the greater part, of the mid-summer type. The opening days were overcast, with occasional showers and seasonal temperatures. Little rain fell from the 6th to the 18th, and from the 8th to the 12th a warm wave of considerable intensity prevailed. The chief storm of the month began the 18th, giving general and quite heavy rains. A season of showers and local storms followed. The closing week was pleasant, the weather, with the exception of scattered showers, being fair, with an abundance of sunshine. The monthly mean temperature was very near the normal. The total rainfall of the month was considerably below the normal, but on account of fairly equitable distribution throughout the month the deficiency was hardly noticeable.

The first three days of August were clear, although somewhat cool, but were followed by nearly a week of cloudy, rainy weather, the temperature continuing low. After the

9th fair weather prevailed for nearly a week, with more than an average amount of sunshine. The temperature also ranged higher, though continuing below the normal, with cool nights. After the 19th there was much cloudiness and deficiency of sunshine through the greater portion of the remainder of the month. From the 19th to the 23d the temperature was generally normal, but from the 25th unseasonably low temperatures set in, continuing nearly to the last of the month. The precipitation of the month was somewhat below the normal, but was quite well distributed. The month was an exception from nearly all Augusts, in the abnormally low temperature, with few warm, summerlike days.

September opened with warm, pleasant and sunny weather, with temperature normal and above during the first five days. This period of fair weather was broken on the 5th with showers and storms, accompanied by hail in some instances. From the 6th to the 9th cooler temperatures prevailed, with night temperatures sufficiently low to cause frosts in many places, which were not widespread and severe. After the 9th the temperature again rose and was much above the normal until the 19th. On the 16th and 17th general and quite heavy showers occurred, with high winds, succeeded by a period of fair weather, although with more or less cloudiness. On the 27th general showers occurred, with copious rainfall, but from the morning of the 28th until the close of the month generally clear weather prevailed. From the 19th to the close of the month the temperature was generally seasonal. In general the weather conditions of the month were seasonal and very favorable.

WEATHER OF OCTOBER, 1903.

The first week of the month was very pleasant, the weather being characteristic of the season, with generally sunny skies and temperatures ranging in the 60s.; but the second seven days were in sharp contrast to the first, a pronounced easterly storm prevailing from the 7th to the 13th inclusive, during which excessive rains fell in all sections, and easterly gales, with fog, prevailed along the coast. During the prevalence of this disturbance shipping of all classes was tied up on account of the gales and high seas, and the rainfall equalled,

and in many instances exceeded, the usual monthly amount. A storm of considerable intensity passed over the section on the 17th-18th, during which heavy rains fell and high winds occurred in coast sections. There was little rainfall during the remainder of the month, and generally speaking the skies were clear. High winds and gales, however, on the 25th, 26th and 27th delayed shipping and resulted in loss of life and property. The temperature was almost continuously above the seasonal average until the 20th of the month, after which the weather was somewhat cooler than usual, with frosts and freezing weather on the 25th and 27th, which reached nearly all sections. Taking the month as a whole, the temperature was considerably above the average. Excepting the second week, the weather of the month was favorable for harvesting and housing crops, and to farm operations generally. The abundant moisture and high temperatures were favorable to vegetation, and feed and pasturage of good quality are abundant, and stock will go to the barn for winter feeding in good condition. Viewing the month throughout, the weather was fairly satisfactory and nearly the average for October.

CROPS OF THE YEAR.

The month of May was unusually dry, and the drought checked vegetation and prevented the germination of seeds. Pastures and mowings suffered from drought, and at the close of the month the prospect was for but a scanty crop of hay. Fall seeding wintered well, but also suffered from drought. The apple bloom was a good one for a non-bearing year. Peaches bloomed only in a few localities, and the bloom of pears, cherries and plums was severely injured by frost. Insects did but little damage. Spraying is little practised except by fruit specialists, but is slowly growing in favor. Farm help was rather more difficult to obtain than for several years. Wages averaged \$20 per month with board, and \$1.50 per day without board. There was a slight increase in the acreage of corn.

Insects did little damage in June, the cold, wet weather perhaps holding them in check. Indian corn was very small

and backward at the close of the month, and turning yellow in many instances. Haying had not begun, the rainy weather preventing, but a great improvement in the crop was indicated. The acreage of forage crops seemed likely to be considerably increased. The acreage of early potatoes was about normal, and the vines were not far enough advanced to give a reliable indication of the final outcome, though prospects were not of the best. Early market-garden crops had generally made poor yields, with increased prices. The flow of milk was remarkably well maintained, with upward tendencies in the price of dairy products, particularly milk. Pastures were much improved by the rains. The strawberry crop was nearly a failure, from frost, drought and rain. Pears, cherries and plums promised light crops. Apples set well and promised a good yield for an off year.

In July very little damage from insects was reported. Indian corn improved somewhat during the month, but at the close was still very uneven and backward, and warmer weather was needed to develop the crop. Much of the crop is used for ensilage. The frequent rains delayed haying and at the close of the month it was still uncompleted in many sections. Rains and warmer weather improved the crop, so that about a normal yield would eventually be secured. Rather more forage crops than usual were planted, and, with the exception of corn, were reported to be in excellent condition. Market-garden crops promised well, with light yields and high prices for those harvested. No early potatoes had been dug, but the crop showed excellent promise. The apple crop was greatly reduced by the mid-summer drop, but was still above the average for a non-bearing year. Pears, cherries and plums did not improve; quinces and grapes promised somewhat better, though not heavy crops; cranberries a short crop, owing to late frosts. Pastures were seldom in better condition. Oats and barley promised well for forage crops, and are mainly used for that purpose.

August reports on Indian corn were most discouraging, and almost a total failure of the crop was looked for, so far

as the grain was concerned, without mid-summer weather in September. The rowen crop was unusually heavy on early cut fields, but so many fields were cut very late that not more than an average crop seemed likely. Potatoes were somewhat backward, but a fair to good crop was promised, although blight had generally appeared and there were some reports of rot. The acreage of tobacco is about the same as last year, but the prospect for the crop was very poor, taken as a whole. Apples promised a good crop for an off year; pears a fair crop; practically no peaches; grapes fair; and cranberries light. Pastures were generally in first-class condition. Oats gave a fair average crop, with barley doing well for forage and little raised for grain.

The warm weather of September brought Indian corn forward rapidly, but it was nevertheless one of the poorest crops ever secured, poorer even than that of 1902. About an average crop of rowen was indicated, and the weather of the month was very favorable for securing the crop. Fall feed was in excellent condition. All farm work was delayed by the lateness of haying, and less fall seeding than usual was done during the month, but the work progressed well and that sowed early made a good catch. Onions were a very poor crop in most localities. Potatoes promised to be an unusually good crop, but were shortened by rot, which was general throughout the State, and not more than a three-fourths crop was secured. Root crops generally promised well, though somewhat late. Celery also promised well, as did other late market-garden crops, but all needed further warm weather. Apples were blown from the trees to a considerable extent, but still give a better crop than usual in an off year. Pears were a fair crop; peaches very few; grapes nearly a failure; and cranberries a light crop in the sections of commercial production.

In the circular to correspondents returnable October 23 the following questions were asked:—

1. What is the value of the corn crop compared with a normal crop?
2. Have root crops proved to be average crops?
3. What is the condition of farm stock?
4. What is the condition of fall seeding?

5. How have prices of crops raised for market compared with former years?

6. Which of the leading crops in your locality have been most profitable?

7. Which of the leading crops in your locality have been least profitable?

8. Considered as a whole, has the season been a profitable one for your farmers?

Returns were received from 146 correspondents, from which the following summary has been made:—

VALUE OF THE CORN CROP.

Seldom, if ever, has the crop of Indian corn been of as little value in Massachusetts as in the present year. The conditions of the spring and summer months were extremely unfavorable for the growth and development of the crop, and the open fall was not sufficient to repair the damage done. Taking the uses of the crop for grain, stover and ensilage into consideration probably its value is a little over one-half that of a normal crop for the State as a whole.

ROOT CROPS.

Root crops are generally reported to be good average crops, and where raised for market are bringing good prices. Potatoes are a light crop as a whole, owing to rot, but have generally sold well. Celery appears to be a very good crop.

FARM STOCK.

Pasture feed has been good throughout the season, and has remained so to an unusually late date. There is hardly a correspondent reporting farm stock to be in anything but the best of condition, and it will go to the barns in prime flesh.

FALL SEEDING.

Less fall seeding than usual has been done, farm work of all kinds being delayed by the lateness of haying. That sown early was generally reported to have made good growth and to be in fine condition. Later sown made a good catch and promises well, though backward.

PRICES.

Of the 138 correspondents answering the question in regard to prices received for crops raised for market, 47 speak of them as average, 85 as higher than usual and only 2 as lower than usual. Shortages in many crops doubtless account for the upward trend of prices. Market-garden crops have all sold well. Dairy products and poultry products have also brought higher prices than usual.

MOST PROFITABLE CROPS.

Ninety-one correspondents, more than a majority, consider hay to have been among the most profitable crops; 44, potatoes; 11, cabbages; 7, oats; 7, sweet corn; 7, cranberries; 5, dairy products; 3, tobacco; 3, apples; 3, forage crops; 2, fruit; 2, asparagus; 2, lettuce; 2, beets; 2, tomatoes; 1, strawberries; 1, cucumbers; 1, ruta-bagas; 1, market-garden crops; 1, root crops; 1, beans; 1, squashes; 1, berries; 1, poultry products; 1, carrots; 1, onions; and 1, corn.

LEAST PROFITABLE CROPS.

One hundred and four correspondents, an unprecedentedly large number to unite on any one crop, report that Indian corn is among the least profitable crops raised; 20, potatoes; 8, onions; 6, squashes; 6, apples; 6, tomatoes; 6, fruit; 4, vegetables; 2, peas; 2, melons; 2, sweet corn; 1, beans; 1, cucumbers; 1, root crops; 1, tomatoes; 1, tobacco; 1, oats; and 1, buckwheat.

PROFITS OF THE SEASON.

The present season can hardly be called a profitable one for our farmers. Most crops gave poor yields, which were only in a measure balanced by good prices. Dairy products sold readily and at good prices, but the failure of the corn crop for grain and ensilage must reduce or even wipe out the profits of many dairymen during the coming winter. Market-gardeners generally had a good year, but horticulturists and general farmers a poor one. Of the 141 correspondents answering this question 36 considered the season to have been profitable, 27 fairly profitable, 14 an average season for profit, while 66 think it has not been a profitable one.

NOTES OF CORRESPONDENTS.

(Returned to us October 26.)

BERKSHIRE COUNTY.

New Marlborough (E. W. RHOADES). — Indian corn is not over one-fourth of a normal crop in value. Root crops are full crops, with the exception of cabbages, which are very poor. Farm stock looks well and thrifty. Fall seeding is late, but is coming on well. Good prices have been realized for market crops. Potatoes have been our most profitable crop and corn our least profitable one. The season has not been a profitable one, owing to early drought, followed by cold and wet weather.

Tyringham (E. H. SLATER). — Corn is about three-fourths of a normal crop in value. Root crops have done fairly well this season. Farm stock is in good condition. Only a little fall seeding has been done. Prices for crops raised for market, have been about the same as last year. The grass crop is the most profitable one raised, and the corn crop the least profitable one. Considered as a whole the season has not been as profitable as usual.

Lee (A. BRADLEY). — Corn is about half a crop. Root crops are full normal crops. Farm stock is in first-class condition. Prices for crops raised for market have ranged 10 per cent higher than usual. Hay has been our most profitable crop and corn our least profitable one. As a whole the season has proved an average one for profit with our farmers.

Stockbridge (F. A. PALMER). — Indian corn is 50 per cent of a normal crop in value. Root crops have proved to be average crops. Farm stock is in fine condition. Fall seeding is in excellent condition. Prices for crops raised for market have been up to the usual mark. Grass and oats have been our most profitable crops and corn our least profitable one. The season has been a fairly profitable one, but losses on corn and potatoes, with help high, does not leave a large margin for the farmer.

Richmond (T. B. SALMON). — Indian corn is a very poor crop. Root crops are up to the usual average. Farm stock is in very good condition. Very little fall seeding has been done. Prices

for crops raised for market have been up to the average. Oats and hay have been our most profitable crops and corn our least profitable one. The season has not been very profitable; about an average one.

Washington (E. H. EAMES). — Corn is about 25 per cent of a full crop in value. Root crops are little raised. Farm stock is in good condition. No fall seeding is done in this vicinity. Prices for market crops have ranged about the same as last year, except that potatoes are a little higher. Potatoes have been our most profitable crop and corn our least profitable one. Taking everything into consideration the farmers have done as well as for the last two years, but not as well as in some former years.

Lanesborough (SCOTT JENKS). — Indian corn is about a three-fourths crop. Root crops have proved to be above the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been about average. Hay has been our most profitable crop and corn our least profitable one. The season has not been as profitable as last year, taken as a whole.

New Ashford (ELIHU INGRAHAM). — Corn is about half a crop in value. Root crops have proved to be average crops. Farm stock is in fine condition. Fall seeding is in fair condition. Prices for crops raised for market have been about average. Oats are our most profitable crop, and corn our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Savoy (W. W. BURNETT). — Indian corn is but a small percentage of an average crop. Root crops are about half crops on the whole. Farm stock is in first-rate condition. Fall seeding is in fair condition. Prices for crops raised for market have been a fair average this year. The grass crop has been our most profitable one and corn our least profitable crop. On the whole the season falls short of an average season for profit to farmers. The first killing frost came on the morning of October 25th, the latest in my remembrance.

FRANKLIN COUNTY.

Hawley (C. C. FULLER). — Indian corn is less than half a normal crop in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is looking well. Prices for crops raised for market have been about an average of those received in former years. Hay and potatoes have been our most profitable crops and corn our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Colrain (A. A. SMITH). — Corn is about half a normal crop in value. Root crops have proved to be average crops. Farm stock is in good condition. Fall seeding is in fine condition. Prices received for crops raised for market have been fully equal to those of former years. Grass has been our most profitable crop and corn our least profitable one. Considered as a whole the season has been an unprofitable one for our farmers.

Shelburne (GEO. E. TAYLOR). — The corn crop is from one-half to two-thirds of a normal crop in value. Farm stock is in good thrifty condition. Fall seeding is in fine condition. Prices for crops raised for market have ranged about the same as last year. Hay and grass have been our most profitable crops and corn our least profitable one. This has been a hard season, but the profit in farming lies in the skillful disposition of the crops raised.

Gill (F. F. SToughton). — The value of the corn crop is about two-thirds or three-fourths of the normal. Few roots are raised. Farm stock is in good condition. Prices for crops raised for market have been fully as high as usual. Grass has been our most profitable crop and corn our least profitable one. Considered as a whole the season has not been a profitable one for our farmers.

Sunderland (J. M. J. LEGATE). — The value of the corn crop is what it is worth for stover, or a very little more. Root crops are not up to the usual average. Farm stock has come in in fine condition. Fall seeding was never in better condition. Prices for crops raised for market have been about average. The present prospect is that tobacco will prove to be our most profitable crop. Corn and onions are our least profitable crops. This has not been a profitable year, being even less so than last year, which we thought a very hard one.

Montague (C. S. RAYMOND). — The value of the corn crop is about 40 per cent of that of a normal crop. Taking the several root crops together they are about average in condition. Farm stock is generally in good condition. Fall seeding is in very good condition. Prices for crops raised for market have been somewhat better than usual, perhaps 10 per cent. Potatoes have been our most profitable crop and corn our least profitable one. I think the season should be called a profitable one, but in most cases the profit is very small.

Northfield (T. R. CALLENDER). — The corn crop is not over 50 per cent of the normal value. Root crops have proved to be average crops. Farm stock is in good condition. Some fall seeding is late, but all is looking well. Prices for crops raised for market have been fully up to the usual average. Potatoes and hay have been our most profitable crops and cucumbers for pickling our

least profitable one. The season has been one of the most unprofitable in my remembrance.

New Salem (DANIEL BALLARD). — The corn crop is probably less than 50 per cent of a normal crop in value. Root crops are about average. Farm stock is looking well. What fall seeding has been done looks well, but little has been put in. Prices for crops raised for market have maintained a fair average. Hay has been our most profitable crop and corn our least profitable one. The season has not been particularly profitable. Farm help has been scarce and high and much needed work has been neglected.

HAMPSHIRE COUNTY.

Enfield (D. O. CHICKERING). — Indian corn is about half a crop in value. Root crops have proved to be good crops. Farm stock is in good condition. Fall seeding is looking well. Prices have been about the same as usual for market crops. Hay has been our most profitable crop and corn our least profitable one. I do not think the season has been a profitable one, considered as a whole.

Belchertown (H. C. WEST). — Judging from present appearances the value of the corn crop will be about three-fourths that of a normal crop. Root crops are fully up to the average. Farm stock is in fairly good condition, but hardly up to the average. Fall seeding was never in better condition. Prices for crops raised for market have been fully up to the average. All our crops have been fairly good, with no failures except some kinds of fruit. The season has been fairly profitable, though it has been a hard one to grow, care for and harvest crops, but where this has been met by extra exertion the result is satisfactory.

Amherst (WM. P. BROOKS). — Where corn is raised for grain it is half of a normal crop in value, where for ensilage it is two-thirds. Root crops are above the average. Farm stock is in excellent condition. Fall seeding is above the average in condition. Prices for crops raised for market are rather above the average. Tobacco (if it sells well), hay and potatoes have been our most profitable crops and corn and onions our least profitable ones. Including the onion growers the season has hardly been a profitable one for our farmers. Frosts have held off unusually late and there is occasional fruit bloom on vines and fruit trees.

South Hadley (H. W. GAYLORD). — Corn is about half a normal crop, ranging from good down to almost nothing. Root crops are not up to the average, results being very uneven. Farm stock is in fine condition. Fall seeding generally in good condition, that sown early being especially so. Hay, with perhaps fruit next,

has been our most profitable crop and corn our least profitable one. The season has not been a profitable one because the increasing cost of everything the farmer has to buy, including labor, has not been met by any corresponding increase in prices received.

Southampton (C. B. LYMAN). — The value of the corn crop is about 40 per cent of that of a full crop. Root crops are up to the usual average. Fall seeding is in good condition. Prices for crops raised for market have been fully up to the usual average. Grass has been our most profitable crop and corn our least profitable one. Considered as a whole, the season has not been a very profitable one for our farmers.

Goshen (ALVAN BARRUS). — The value of the corn crop does not exceed 50 per cent of the normal, including ensilage. Root crops will fall 25 per cent below the average. Farm stock is in normal condition, or a little better. Fall seeding is generally in good condition. Prices for crops are high with very little fit for the market. Hay has been our most profitable crop and corn and garden crops our least profitable ones. The season has been very unsatisfactory and unprofitable. The apple crop is very uneven, but better than expected; prices not yet established.

Worthington (C. K. BREWSTER). — Indian corn is not more than one-fourth of a normal crop. Root crops are a good deal less than average crops. Farm stock is in good condition. Fall seeding is in fair condition. Hay and potatoes have been our most profitable crops and corn our least profitable one. Prices for crops raised for market fully as strong as usual. Considered as a whole the season has not been a profitable one for our farmers.

Middlefield (J. T. BRYAN). — There is very little mature corn and the stover is small. Root crops have proved to be average crops. Farm stock is in excellent condition. Fall seeding is in good condition. Prices have been good for all produce. Hay, fodder crops, potatoes and fruit have been our most profitable crops and corn our least profitable one. The season as a whole has been fairly favorable.

HAMPDEN COUNTY.

Tolland (E. M. MOORE). — Corn is about 50 per cent of a normal crop in value. Roots have done well and are average crops. Farm stock is in good condition. Land that was seeded early is in good condition. Grass has been our most profitable crop and corn our least profitable one. Considered as a whole, the season has been fairly profitable, but not above the average.

Russell (E. D. PARKS). — Corn is less than half a crop as to value of grain, but about normal as to stover. Root crops are about

average crops. Farm stock is in good condition, fall feed being still good. Fall seeding seems to be doing nicely. Prices for market crops have been equal or above those of former years. Hay and potatoes have been our most profitable crops and corn and fruits our least profitable ones. It has not been a good year for farmers, everything being backward, and some crops having to be replanted.

Agawam (J. G. BURT). — Root crops are not up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been higher than usual. Sweet corn has been our most profitable crop and tobacco our least profitable one. Considered as a whole the season has not been a profitable one for our farmers.

West Springfield (T. A. ROGERS). — Corn is not more than a two-thirds crop in value. Root crops are not over 80 per cent of the usual average. Farm stock is looking well. Fall seeding has a fair start and weather conditions are very favorable. Prices for crops raised for market have ranged rather above the usual average. Hay and berries have been our most profitable crops, and corn, potatoes, onions and most fruits our least profitable ones. The year is generally regarded as a very hard one. Few crops have matured well.

Chicopee (R. W. BEMIS). — Indian corn is two-thirds of a crop. Root crops have all done well. Farm stock is in good condition. Not much fall seeding has been done, but that put in is in good condition. Prices for crops raised for market have been good. Hay or grass has been our most profitable crop and onions our least profitable one. Considered as a whole the season has been a profitable one for our farmers.

East Longmeadow (J. L. DAVIS). — The corn crop is 50 per cent of a normal crop in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Average prices have been received for crops raised for market. Hay has been our most profitable crop and potatoes our least profitable one. The season has not been a profitable one, as wages have been high and the weather poor.

Palmer (O. P. ALLEN). — Indian corn is about half a crop in value. Root crops are up to the usual average. Farm stock is in very good condition. Fall seeding is in good condition. Prices for crops raised for market are fully up to the usual average. Potatoes have been our most profitable crops and corn our least profitable one. Considered as a whole, the season has not been as profitable as usual.

Wales (G. S. ROGERS). — Corn is not one-tenth of a normal

crop. Root crops have not been average crops. Farm stock is in good condition, better than average. Fall seeding is in fine condition. Prices for crops raised for market are average. Potatoes have been our most profitable crop and corn our least profitable one. The season has not been a profitable one for farmers, as the hay crop was light and corn almost a failure.

WORCESTER COUNTY.

Dudley (J. J. GILLES). — Indian corn is three-fourths of a normal crop in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market are considerably higher than in former years. Potatoes, and in some instances cabbages, have been our most profitable crops and corn our least profitable one. Considered as a whole the season has been a profitable one for our farmers.

Spencer (H. H. KINGSBURY). — The corn crop is about 25 per cent of the value of a normal one. Root crops of all kinds have been quite up to the average. Farm stock is in excellent condition. The weather has been very favorable for fall seeding, which is in fine shape. Prices for farm produce have ruled higher during the entire season. Considering the cost of production and the expense of harvesting hay has been our most profitable crop. Corn and potatoes are not paying crops this year. The usual farm operations have not proved as profitable this season as usual.

New Braintree (C. D. SAGE). — The value of the corn crop is not over 25 per cent of that of a normal crop. Root crops are average crops. Farm stock is in good condition. Fall seeding is in fair condition. The prices for crops raised for market have been about the same as in former years. Hay has been our most profitable crop and corn our least profitable one. The season has been a fairly profitable one, considered as a whole.

Petersham (S. B. COOK). — Corn is not over half a crop in value. Root crops have proved to be average crops. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have ruled about the same as usual. Hay has been our most profitable crop and corn and apples our least profitable ones. Considered as a whole, the season has been fairly profitable.

Phillipston (A. D. CLIFFORD). — Corn is not over one-third of a normal crop in value. Root crops are about average. Farm stock is looking well. Very little fall seeding is done here. The prices of market crops have been considerably above the average. Cabbages and beets have been our most profitable crops and

squashes and tomatoes almost failures. The season as a whole has not been profitable to a majority of the farmers, although dairying has been fairly profitable.

Princeton (A. O. TYLER). — Indian corn is about 75 per cent of a normal crop in value. Root crops are about two-thirds of the usual average. Farm stock is looking well. Fall seeding is in good condition. Prices for crops raised for market have been above the average. Hay has been our most profitable crop and corn our least profitable one. Considered as a whole, the season has been about an average one for profit.

Lancaster (S. C. DAMON). — There is practically no corn crop. Root crops have proved to be average crops. Farm stock is in good condition. Fall seeding is in extra good condition. Prices for crops raised for market have been higher than usual. Hay has been our most profitable crop and corn our least profitable one. Considered as a whole the season has not been a profitable one for our farmers.

Worcester (H. R. KINNEY). — Corn is probably not over half a crop in value, some pieces fair, others very poor. Root crops are up to the usual average. Farm stock is fully up to the average in condition. Fall seeding is in fair condition. Produce has sold well and prices have been above the average. Hay has been our most profitable crop and corn our least profitable one. Milk producers should have had a good year if they had but little land in corn. Vegetables and fruits have given, on the whole, unsatisfactory crops, but have sold high. The season has been anything but a satisfactory one for the average farmer.

Northborough (J. K. MILLS). — The value of the corn crop is 65 per cent of that of a normal crop. There will be about an average crop of roots. Cattle are looking well and will come to the barns in good condition. Fall seeding is looking extra well. Prices have been good and for some crops much higher than in former years. All crops have proved to be profitable, but corn, potatoes and apples will give the smallest returns. The season has been a profitable one for our farmers.

Westborough (B. W. HERO). — The corn crop is about half a normal crop in value. Root crops are below the average. Farm stock is in excellent condition. Fall seeding is looking well. Prices have averaged much higher than usual for crops raised for market. Hay has been our most profitable crop and corn our least profitable one. Considering the increased prices received the season has been an average one for profit.

Upton (B. A. JOURDAN). — The corn crop is not over 50 per cent of a normal crop in value. Root crops are very good; cab-

bage poor. Farm stock is looking well. Fall seeding is in very good condition. Potatoes and hay have been our most profitable crops and corn our least profitable one. Prices for crops raised for market have been very good. The season has not been a profitable one in this vicinity.

Sutton (C. P. KING). — The corn crop is very poor and not as valuable as in former years. Root crops are about average crops. Farm stock is nearly all in good condition. Fall seeding is late and very backward. Crops have brought higher prices when sent to market than for some years. Hay and cabbages have been our most profitable crops and corn and potatoes our least profitable ones. Considered as a whole the season has not been a profitable one. Frosts have held off very late.

MIDDLESEX COUNTY.

Framingham (J. S. WILLIAMS). — The corn crop is not over 75 per cent of a normal crop. Root crops in this section are up to the average and have sold exceptionally well. Farm stock as a rule is looking well. The weather conditions have been favorable for fall seeding and good results are promised. All market crops have sold readily at much higher prices than usual. Hay has been our most profitable crop and corn and potatoes have not come up to the average for profit. On the whole the season must have been a profitable one for our farmers as prices have been high for garden truck.

Maynard (L. H. MAYNARD). — Indian corn is the poorest crop for years. Root crops are up to the usual average. Farm stock is looking well. Fall seeding is looking extra good. Prices for crops raised for market are about the same as formerly. Potatoes and all market-garden crops have done unusually well considering the season. Corn has probably been our least profitable crop. Considered as a whole, the season has been a profitable one for our farmers.

Stow (G. W. BRADLEY). — Corn is about a one-third crop in value. Root crops are not as good as usual. Farm stock is in very good condition. Fall seeding is better than for some years. Prices for crops raised for market will average about the same as usual. Hay has been our most profitable crop and sweet corn our least profitable one. Wherever good crops were secured the season has been a profitable one.

Pepperell (P. J. KEMP). — The value of the corn crop is about one-third of that of a normal crop. Root crops are up to the usual average. Farm stock is looking finely. The weather conditions have been very favorable for fall seeding and it has got a good

start. The prices received for crops raised for market are about 5 per cent in advance of former years. Hay has been our most profitable crop and corn our least profitable one. The season has been a decidedly unprofitable one for farmers, as they have had little to sell, fruit being a failure, potatoes rotting and no corn maturing.

Dunstable (A. J. GILSON). — The value of the corn crop is about half that of a normal crop. Root crops have proved to be above average crops. Farm stock is generally in good condition. Fall seeding is in fine condition and growing fast. The prices received for crops have not varied much from former years. Hay has been our most profitable crop and corn our least profitable one. Farm labor has been scarce and high and crops light, so that the season has not been a profitable one.

Chelmsford (P. P. PERHAM). — The corn crop is less than half an average crop. Root crops have proved to be good average crops. Farm stock is in good condition. Fall seeding is looking well. Prices for all crops raised have been above the average. The apple crop has been our most profitable crop and potatoes our least profitable one. As a whole the season has been a profitable one for our farmers.

Billerica (GEO. P. GREENWOOD). — The value of the corn crop is 60 per cent of that of a normal crop. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices have ruled higher than usual for crops raised for market. Cabbages and ruta-bagas have been our most profitable crops and squashes our least profitable one. Those who have been fortunate enough to raise crops have sold them well, but many have raised very little and there has been less to harvest than for many years.

Wakefield (CHAS. TALBOT). — The value of the corn crop is not over 35 per cent of that of a normal crop. Root crops are hardly up to the usual average. Farm stock is in very good condition. Fall seeding is looking well. Prices have ruled about 20 per cent higher than usual for crops raised for market. All crops are below the average in yield and potatoes are rotting badly. Considered as a whole the season has not been a profitable one, all farmers complaining of falling behind.

Winchester (S. S. SYMMES). — There is no field corn raised here. Root crops are up to the usual average, beets and parsnips exceptionally good. Farm stock is in first-class condition. Fall seeding is as good as possible. Prices have been higher than usual for crops raised for market. Sweet corn has been our most profitable crop and squashes our least profitable one. The season has been

a profitable one and almost all our farmers have netted more than for several years. Baldwin apples are poorer in quality and quantity than for many years.

Weston (H. L. BROWN). — Indian corn is not more than half a normal crop in value. Root crops are up to the usual average. Farm stock is in good condition. Early seeding is in good condition. Prices for market-garden crops have mostly been good. Sweet corn has been as profitable as any crop, and cabbages have been profitable where a good yield was secured. Corn has been our least profitable crop, both where planted for grain and for the silo. The squash crop has been almost a failure, very few ripening. The season has been profitable for some and unprofitable for others.

ESSEX COUNTY.

Amesbury (F. W. SARGENT). — The value of the corn crop is less than 25 per cent that of a normal crop. Root crops are fair, but hardly up to the average. An abundance of feed has kept farm stock in good condition. Fall seeding is in very good condition. Those who have raised produce are getting better prices than usual. Hay has been our most profitable crop and corn our least profitable one. The season has been the most unprofitable and unsatisfactory ever known. Onions generally poor and sweet corn almost a failure.

Haverhill (EBEN WEBSTER). — The corn crop is somewhat less valuable than usual. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is looking well. Prices for crops raised for market have been higher than usual. The season has been about an average one for profit, crops being poor but prices good.

Newbury (G. W. ADAMS). — Corn is not more than one-fourth of a normal crop in value. Root crops are very nearly up to the usual average, but not quite. Farm stock is in very good condition. Fall seeding is fair to good. With the exception of early sweet corn and tomatoes prices have been no higher for crops raised for market. Hay and potatoes have been the most profitable crops and onions our least profitable one. A remarkably poor year combined with a great scarcity of laborers and excessively high wages.

Rowley (D. H. O'BRIEN). — Corn is about 25 per cent of a normal crop in value. Root crops have proved to be good crops. Farm stock is in very good condition. Fall seeding is in good condition. Prices for crops raised for market have been rather above the average. Potatoes have been our most profitable crop

and Indian corn our least profitable one. Considered as a whole the season has been a very poor one for our farmers.

Dunvers (C. H. PRESTON). — Corn is about half an average crop in value. Root crops are fair in many cases, but not up to the average. Farm stock is in good condition. Fall seeding is in good condition. Cabbages and in some cases sweet corn have been our most profitable crops and potatoes our least profitable one. Considered as a whole the season is not up to the average for profit.

NORFOLK COUNTY.

Stoughton (C. F. CURTIS). — The value of the corn crop is only about half that of a normal crop. Root crops are up to the usual average. Farm stock is in excellent condition owing to good feed. Fall seeding is catching well. Prices for crops raised for market are about 20 per cent higher than usual. Hay has been our most profitable crop and corn our least profitable one, both for grain and the silo. I consider the season has been a very profitable one, as high prices offset some poor crops.

Canton (E. V. KINSLEY). — The corn crop is about two-thirds of an average crop in value. Owing to copious rains root crops are a good average. All farm stock is looking finely. Fall seeding is backward but doing well. Prices have ruled very high. Cabbages have been our most profitable crop. Sweet corn was almost a failure and potatoes rotted badly. The season has not been profitable. Dairy farmers have done well, but the outlook for winter is discouraging as those having silos report from one-half to two-thirds the usual yield, which will not be offset by the possible slight increase in the prices received for milk.

Walpole (E. L. SHEPARD). — The value of the corn crop is two-thirds that of a normal crop. Root crops are not up to the usual average. Farm stock is in good condition. Fall seeding is in fair condition. Prices for crops raised for market have been higher than for some years. Potatoes have been our most profitable crop and corn our least profitable one. The season is not up to the normal for profit.

Millis (E. F. RICHARDSON). — The corn crop is two-thirds of a normal crop in value. Root crops have proved to be average crops. Farm stock is in fine condition. Fall seeding is in good condition. Prices for crops raised for market have been better than usual. Grass has been our most profitable crop and corn and potatoes our least profitable ones. Considered as a whole the season has been a fair one for profit.

Norfolk (A. D. TOWNE). — Indian corn is about 45 per cent of

a normal crop in value. Nearly all root crops are up to the usual average. Farm stock is in good condition. Fall seeding is fully up to the average. Prices for eggs, milk and vegetables have been a little higher than usual. Potatoes and hay have been our most profitable crops. The season has been unfavorable for most farm crops and this, with the lack of fruit and the high prices for grain, has given the farmers rather a poor year.

BRISTOL COUNTY.

Mansfield (WM. C. WINTER). — Indian corn is not over 50 per cent of a normal crop in value. Root crops have proved to be average crops. Farm stock is generally in good condition. Not much fall seeding has been done, but it is generally in good condition. Hay has brought higher prices than usual, other crops about as usual. Hay and potatoes have been our most profitable crops and corn and apples our least profitable ones. This being a dairy section I should say the season had been about an average one.

Norton (WM. A. LANE). — Corn is about a third of a normal crop in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is looking well. Prices for crops raised for market have been more than average. Potatoes have been our most profitable crop and corn our least profitable one. Considered as a whole the season has been a profitable one for our farmers.

Seekonk (FRED A. HOWE). — Indian corn is not more than a two-thirds crop in value. Root crops have proved to be average crops. Farm stock is in good condition. Fall seeding is in good condition. Prices have advanced 50 per cent over average years for crops raised for market. Cabbages, sweet corn and tomatoes have been our most profitable crops and potatoes and melons our least profitable ones. Considered as a whole the season has been a profitable one.

Dartmouth (L. T. DAVIS). — Corn is not over a one-fourth crop for grain, but the stover is about normal. Root crops will be about average. Farm stock is in very good condition. Fall seeding came up very well, but does not grow as fast as some years. Prices for crops raised for market have been rather above the average for some kinds. Hay has been our most profitable crop and it is hard to say which crop has been least profitable, all have been so variable. As a whole the farmer has not much more than got a new dollar for an old one.

Acushnet (M. S. DOUGLAS). — The corn crop was almost a failure and its value is a third below that of a normal crop. Root crops

are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been rather higher than usual. Hay has been our most profitable crop and corn our least profitable one. Taken as a whole the season has been a fairly profitable one.

PLYMOUTH COUNTY.

Norwell (H. A. TURNER). — Corn is about one-third of the usual crop in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is generally looking well. Prices have been good for most crops. Hay and potatoes have been our most profitable crops and beans and tomatoes our least profitable ones. Considered as a whole the season has been fairly profitable.

Halifax (G. W. HAYWARD). — Indian corn is of no value except for stover. Root crops have proved to be average crops. Farm stock is in excellent condition. Fall seeding looks finely where put in early enough. Prices for crops raised for market have ruled fully as high as in former years. Hay has been our most profitable crop and corn our least profitable one. The season has been a profitable one for the farmers of this town.

Duxbury (R. T. RANDALL). — Corn is a poor crop. Root crops are not up to the usual average. Farm stock is in good condition. Fall seeding is good but late. Prices for crops raised for market have been about the same as last year. Hay has been our most profitable crop and corn our least profitable one. Turnips and cabbages are good crops, less planted than some years. Apples and grapes gave poor yields. As a whole the season has been unprofitable.

Kingston (G. L. CHURCHILL). — The value of the corn crop is not more than one-third that of a normal crop. Root crops have proved to be average crops. Farm stock is in very good condition. Fall seeding is in very fair condition. Prices for crops raised for the market are fully up to the standard. Potatoes have been our most profitable crop and corn our least profitable one. I think, taking everything into consideration, the year has been a profitable one.

Lakeville (N. G. STAPLES). — The corn crop is within 10 per cent of a normal crop in value. Root crops have proved to be average crops. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been about the same as in former years. Potatoes have been our most profitable crop and corn our least profitable one. Considered as a whole the season has been a profitable one for our farmers.

BARNSTABLE COUNTY.

Bourne (D. D. NYE). — Indian corn is about a normal crop in value. Root crops are above the average in condition and promise. Farm stock is in very good condition. Fall seeding is in very good condition. Prices for crops raised for market have been better than last year. Corn has been our most profitable crop and onions our least profitable one. Taking crops altogether there has been a profit on the season, better than was expected.

Mashpee (W. F. HAMMOND). — There will be one-third of a normal crop of corn. Root crops are about average crops. Farm stock is looking well. All crops have brought about average prices. Potatoes have been our most profitable crop and corn our least profitable one. Considered as a whole the season has been profitable, for while some crops fell short prices ranged so much above the average that our farmers have made a small profit.

Brewster (T. D. SEARS). — The value of the corn crop is below that of the normal year. The root crop is above the average of the past few years. Farm stock is in very good condition. Fall seeding is looking well owing to rain and warm weather. The prices received for farm crops are above those of the last two or three years. Cranberries have been our most profitable crop and apples and pears our least profitable ones. Taken as a whole the past season has not been a profitable one for our farmers.

Orleans (F. E. SNOW). — Indian corn is a fairly good crop. Root crops are up to the usual average. Farm stock is not in the best of condition on account of short pastures. Fall seeding is in good condition. Good prices have generally been received for crops raised for market. Cranberries and asparagus have been our most profitable crops and fodder crops our least profitable ones. Considered as a whole the season has been a fairly profitable one.

Truro (D. E. PAINE). — No Indian corn is raised here. Root crops are up to the usual average. Farm stock is in fair condition. Very little fall seeding has been done. Prices received for crops raised for market have been fair. Potatoes have been our most profitable crop. Considered as a whole the season has been a profitable one for our farmers.

BULLETIN OF
MASSACHUSETTS BOARD OF AGRICULTURE.

THE PREVENTION OF FUNGOUS DISEASES PECULIAR TO
GREENHOUSE PLANTS.

By DR. GEORGE E. STONE, *Professor of Botany, Massachusetts Agricultural College.*

The diseases to which plants are subject under glass require different methods of prevention than those in common use out of doors, since in greenhouses the crop conditions are largely under control, whereas in outdoor crops they are left to the mercy of the weather and the whims of the season. To meet the unforeseen seasonal conditions to which outdoor crops are subject it is necessary to resort to methods of prevention each year. Such methods consist of spraying crops, or applying other treatments before certain pests have made their appearance. There is, however, very little need of the application of spraying mixtures to greenhouse plants, since the conditions which give rise to diseases can be and are controlled by expert gardeners to a very large extent. The recommendations, therefore, for a general system of spraying for indoor crops, such as is expedient at the present time for outdoor crops, would be irrational, and would constitute a step in the wrong direction. Every skilled and intelligent grower realizes this, and the more skilled a gardener is, the fewer diseases he has to contend with. The gardener who can turn out a nearly perfect crop as regularly as a manufacturing establishment turns out its products is qualified for the severest tests of proficiency.

The increased production of high-grade greenhouse products in Massachusetts has been the means of training and developing a large class of men as efficient growers, and with this increased skill and knowledge there has come about a better understanding of the causes of diseases and methods of controlling them. The

greater part of our knowledge concerning the control of greenhouse diseases has been derived from the intelligence and skill of the progressive gardeners, whereas, in a case of outdoor crops, the experiment stations have been foremost in offering suggestions for their control. The trained agriculturists can consistently give information in regard to the control of specific diseases affecting outdoor crops, with which he is more or less familiar, but in cases of greenhouse crops the methods of treatment are so different, and require such an insight into the plant requirements, that it is almost necessary for one to be an expert grower, or, at any rate, understand something about the normal conditions of the crop, before his judgment or advice is worth much. It is necessary, at least, that he should possess a thorough understanding of the influence on plants of the three cardinal factors, heat, light and moisture, and the role they play in the production of normal crops, together with their relationship to the development of disease-producing organisms. Such matters as soil texture and soil fertility also constitute important features which are necessary to understand. The great attention necessary to give to such matters as heat, moisture and light in greenhouse culture is only appreciated by the trained gardener. Some of the most troublesome and disastrous diseases are entirely controlled by the intelligent use of these factors, and others, which are more or less common, could no doubt be controlled or greatly alleviated if modifications in the method of growing certain crops were practicable.

The benefits which have resulted from spraying out-of-door crops have unfortunately been the means of inducing some to believe that spraying is the only method of treating plant diseases, and where spraying is not recommended as a remedy their enthusiasm diminishes. We have grown for some years many experimental crops in the greenhouse, and we have seldom had occasion to see the need, or possible benefit, to be derived from spraying. In the elimination of diseases from greenhouse crops, the ultimate aim should be to select varieties of plants which are immune to disease, as well as to study and devise conditions which will not favor the development of fungi. The most perfect and the hardiest plant organism can become diseased in a remarkably short period of time if the conditions that are suitable for its normal requirements are changed. For example, the geranium constitutes one of our most hardy greenhouse plants, nevertheless, if such a rugged plant is placed under a bell glass, it becomes sickly in a very short time, and in a few days it will succumb to disease, even when subject to light and supplied with all of the necessary ele-

ments of plant food. Such an experiment is interesting as showing how quickly the healthiest organism can fall a prey to disease and become dilapidated.

The explanation of the appearance of some of our most troublesome diseases affecting plants at the present time can be found in part in the practice of increased forcing, and is also due to the fact that new parasitic organisms have been introduced from time to time from other countries through traffic. Some of these fungi, however, which have recently proven disastrous, have been with us for some years, if not always, and the reason of their becoming more troublesome at the present time can be attributed to the increased production of more succulent, tender plants, brought about by forcing, which enables these parasites to find more favorable conditions in which to thrive. With every modification and innovation in the growing of plants, there is likely to occur new difficulties and obstacles to overcome.

Constitutional weaknesses which develop in some varieties and are inherited in others are unfavorable to immunity. Varieties of carnations inclined to succulency, or containing two or three per cent more water contents in their leaves, have proven much more susceptible to rust than those containing less water.

There is little doubt but that many diseases could be prevented by modifications in the methods of growing plants, if such could be adopted. The so-called "drop" in lettuce would prove less disastrous if the plants could be elevated from the soil sufficiently to allow air and light to penetrate to the stem. This would result in producing firmer and more resistant tissues.

Experiments have shown that a covering of coarse sand about lettuce plants materially reduced rots, simply from the fact that sand retains moisture much less readily than loam, thus offering less favorable opportunities for fungus infection, and no doubt a circulation of air about the stems would prove beneficial. In the same manner, subirrigation reduces stem rots by maintaining a smaller amount of moisture in the top layers of soil. The shutting out of light and air by planting too thickly constitutes a source of danger to disease. Water cress and parsley offer good examples of the effects of overcrowding, due to luxuriant growth. When these crops are allowed to grow high and become thick they produce weak stems, and become affected with the same fungus that produces "drop" in lettuce, whereas when closely cropped there is little loss from this disease. The exclusion of light and air necessarily arising from overcrowding are responsible for this. In most instances the stem rots of the chrysanthemums have been

induced by overcrowding, and undoubtedly the carnation would suffer less if more light and air could reach the stems.

Various stem rots could undoubtedly be eliminated, to a large extent, by changing the soil conditions about the plants, such as by the application of coarse sand around the stems. In one case the stem rot in the parsley was greatly reduced by setting the plants well up above the soil, thus exposing the stem and crown to light and air, which resulted in the development of more resistant tissues. The matter of moisture on the foliage plays an important part in infection. The carnation rust has been largely reduced by sub-irrigation methods and also by applying water absorbents, such as lime, to the foliage. In short, many fungous diseases peculiar to foliage can be much lessened and in many instances prevented by regulating the moisture conditions of the air. If it were possible to control the moisture conditions out of doors the same would hold true there. For example, a cold, wet spring induces peach leaf curl, while a dry, warm spring is not favorable to the development of the fungus which causes curl, and many other cases might be cited where infection is due to weather conditions which cannot be controlled; whereas, in under-glass culture there is little difficulty in controlling these conditions, and preventing such diseases. The application of the moisture absorbent to asparagus plants has in some instances very perceptibly reduced the rust, and even the cover of an apple tree is often sufficient to keep the dew off, and render the plants free from infection. With this idea in mind, tent cloth crops have been tried with some degree of encouragement, although the expense of tent covers, and the results obtained from the same, do not at present appear to be such as to warrant their use except in special cases. Another element which has a great bearing on the health of plants, in general, is proper feeding. The influence which proper feeding and cultivation has on the susceptibility of crops to disease is quite marked. There is little doubt but that in many cases time and money could be better spent in securing robust crops by cultivation and feeding than in spraying sickly ones.

TOMATOES.

Blight or Mildew (Cladosporium fulvum, Cke.).

This mildew grows on both outdoor and greenhouse tomatoes. Infected plants show, on the under surface of the leaves, a velvety brownish-colored downy mass. The upper surface of the leaves turn yellowish and the edges become curled. It propagates quickly and freely by spores. The method of preventing mildew in the

greenhouse is to keep down the moisture in the air, and give the plants sufficient light and ventilation. Massey, in the North Carolina Station? Bulletin No. 170, states that spraying with a weak solution of potassium sulphide, and dusting the pipes with a wash of sulphur and lime, completely prevented mildew. The latter treatment, however, is probably the most effectual. For out-of-door plants the best treatment would consist in spraying with some standard fungicide.

Eel Worms or Nematodes (Heterodera radicicola, (Greef) Mull.).

Greenhouse tomatoes, like many other plants, are frequently troubled with root galls caused by eel worms or nematodes (see Fig. 1). These worms affect some plants much worse than



FIG.—1. Galls on tomato roots caused by eel worms.

others. The tomato, however, does not show the effect of gall-infested roots as much as the cucumber and muskmelon, the latter plant being especially susceptible to them. The remedy for eel worms consists in soil desiccation, or either freezing or sterilizing. The latter method of treatment is the most effectual, and where conveniences are at hand for doing this work it is fully as cheap. Whatever treatment is employed care should be taken to treat the manure, as our experiments have shown that the manure pile constitutes one of the greatest sources of infection for eel worms.

This species of eel worm is not indigenous to our climate, and probably very rarely survives in our soil over winter. It does, however, winter successfully in unfrozen manure heaps.

Fruit Rots.

Under this head are included troubles caused by a number of organisms possessing different characters, such as bacteria and fungi, which cause a rotting of the fruit (see Fig. 2.) Fruit rots are common to both greenhouse and outdoor tomatoes, and the general practice has been to spray tomato crops when grown out of doors. The results from spraying experiments are not, how-

ever, entirely satisfactory in all cases, partly, no doubt, from the fact that a number of different organisms have been involved in fruit rots, some of which would appear to be more difficult to control than others. For greenhouse culture we recommend, as a partial means of prevention, the keeping of moisture from the fruit or foliage as much as possible, for in our experiments we have found 33 per cent less fruit rot where we did not practice syringing the plants than where we did syringe.

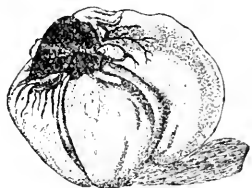


FIG. 2.—Tomato rot.

There are other troublesome diseases of the tomato, apparently more common in the south than in the north. Among these may be mentioned leaf blights (*Septoria*, *Alternaria*), tomato wilts (*Fusarium* *Bacillus*), etc. There is also a functional disorder occasionally met with in greenhouse tomatoes, known as *Edema* or dropsy. This gives rise to a curling and rupturing of the cells of the leaf. *Edema* is caused by excessive absorption of water from the soil, brought about by too high soil temperatures. The peculiar crinkling, curling and high coloration of tomato leaves, common to greenhouse culture, especially when grown in a rich soil and when severe pruning has been practised, must not be confounded with the dropsy. The latter peculiarity is a form of indigestion, and the same peculiar curling of leaves may be observed on young stump shoots of forest trees which have been cut. Unpruned tomato plants, grown under exactly similar conditions, seldom, if ever, exhibit these peculiar symptoms.

CUCUMBERS.

The diseases affecting greenhouse cucumbers are referred to more extensively in Bulletin No. 87, issued by the Hatch Experiment Station.

Downy Mildew (Plasmopara Cubensis, (B. & C.) Humphrey).

This mildew can be readily distinguished by the typical yellowish, angular spots on the leaves (see Fig. 3). It is likely to occur on greenhouse crops from August to November or December. If crops, however, are set in the house as late as October, they are apt to remain free from mildew during the rest of the year. Keeping the moisture down in the house, together with ventilation and



FIG. 3.—Cucumber downy mildew, showing the characteristic angular spots.

light, is the best prevention of mildew. We have kept this mildew entirely in check on more than one occasion by simply keeping the moisture down in the house and supplying the plants with sufficient light and air. Since mildew infection comes largely during the summer, one of the best ways to obviate it is to not set the plants until about October. The mildew can also be prevented by spraying with Bordeaux, as has been shown by experiments. In short, this is the only remedy that can be applied to outdoor crops of cucumbers.

Anthrachnose (*Colletotrichum Lagenarium*, (Pass.) Ell. & Hals.).

This fungous disease causes a great deal of trouble to outdoor crops of melons and cucumbers (see Fig. 4). It has become well-

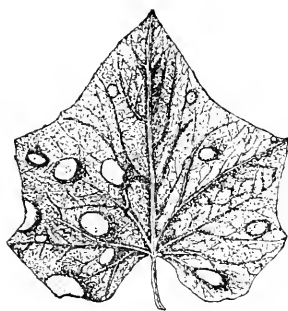


FIG. 4. — Cucumber leaf affected with anthracnose.

nigh impossible during the past two or three years to grow melons out of doors. From our numerous correspondence with farmers each year relating to this disease it would appear that it made little difference whether one sprayed or did not spray. The result has always been the same, namely, the plants would blight and most of the crop would be lost. *Anthrachnose* occasionally attacks greenhouse crops during the spring and summer, although

our experience in handling cucurbitaceous crops under glass, during every month in the year, without a trace of infection, has led us to believe that the same conditions are necessary for the prevention of *Anthrachnose* as for the prevention of mildew, namely, absence of extreme moisture conditions in the house.

Timber Rot.

Timber rot is caused by the same fungus that produces lettuce drop. On the cucumber it causes canker-like growths on the stem, such growths being associated with black pustules about one-



FIG. 5. — Timber rot, cucumber.

sixteenth or one-eighth inch in diameter (see Fig. 5). It does not cause excessive damage to cucumbers, as a rule, and the fungus

can be entirely eliminated by applying the same methods as described under drop of lettuce.

Eel Worms.

These are very likely to infect cucumber roots, and if very abundant they greatly injure the crop. Many of our greenhouse growers have been more or less troubled with them for some years. For remedy see "Tomatoes." Cucumbers are occasionally subject to other fungous diseases. The most important ones, however, have been touched upon.

LETTUCE.

There are various diseases common to greenhouse lettuce which have been described in Bulletin No. 69, issued by the Hatch Experiment Station, Amherst, Mass.

Drop (Sclerotinia Libertiana, Fekl.).

This constitutes the most destructive disease of lettuce, and is characterized by the plants wilting and dropping into an insignifi-



FIG. 6. — A typical normal lettuce head.



FIG. 7. — Lettuce plant affected with drop caused by the fungus *Sclerotinia Libertiana*.

cant mass (see Figs. 6 and 7). This troublesome disease is caused by a sporeless soil fungus, which attacks the stem of the plant, and the only effectual remedy is found in soil sterilization.

Rhizoctonia.

This is the generic name of the fungus which causes a rotting of the lower leaves of lettuce plants, and occasionally works in the stem and head, much to the detriment of the crop. The fungus is a sterile or sporeless type of soil organism, and the same remedy is applicable to this as to the preceding trouble.

Downy Mildew (Bremia Latucae, Regel.).

A whitish, downy, mildew growth frequently grows on the lower leaves of young lettuce plants, and on the exterior leaves of the mature head. It seldom attacks the normal healthy portions of the

plant, and does not appear to cause a great deal of damage to lettuce crops, consequently little complaint is made in regard to it. We have found that this mildew appears to be incapable of living over the summer season in a house which is empty for a time, and becomes more or less dry. The spores, or conidia, of this fungus are apparently of very little duration. It is seldom that the fungus is troublesome enough to call for remedial measures.

Top Burn, or Tip Burn.

The above trouble is not caused by any organism, but is due to a lack of proper conditions in the lettuce house. Top burn is merely a wilting of the young, tender leaf extremities, which causes them to dry up and turn brown or black. This greatly disfigures it, and injures to a considerable extent the sale of the produce (see Fig. 8). Amateurs and inexperienced growers are very likely to have top burn. It gives little or no concern however, to expert handlers of lettuce crops. The whole matter is one dependent upon the absorption and giving off the water by the plant, together with the conditions which govern the formation of the texture of lettuce, namely, heat, light, etc. To obviate top burn, care must be taken not to allow high day temperatures during, or directly after cloudy days, and low night temperatures should be maintained during cloudy weather. Skilled lettuce growers know the texture of their plants, and what treatment they are capable of standing. The temperature conditions are governed entirely by what they think the plant is capable of enduring. Where a rapid growth of lettuce takes place, in consequence of any form of stimulation, care should be taken to govern temperature conditions, especially those of night temperature. Lettuce plants, like all others, make most of their growth during the night, and the character or texture of that growth is dependent to a large extent upon temperature. High night temperature will cause rapid growth and a delicate texture, and lower temperature will give rise to less growth with a firmer texture.

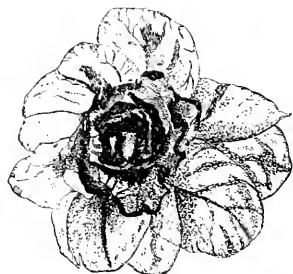


FIG. 8. — Top burn of lettuce, characterized by a browning or blackening of the edges of the leaves in the head.

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CHIRYANTHEMUMS.

Powdery Mildew (Erysiphe Cichoracearum, DC.).

Mildew frequently shows itself to a slight extent on the leaves of chrysanthemums. It is of little consequence, however, to the

careful grower. The mildew is similar to that found on the roses, and can be held in check by the same means.

Rust (Puccinia Chrysanthemi, Roze).

The first appearance of the chrysanthemum rust in America occurred in this State during the year 1896, since which time it has spread nearly over the whole United States. The first two or three years of the outbreak proved the worst, and at present little is heard about it in this section, especially from our largest and best growers. Its disappearance appears to be due to two causes, namely, the discovery and application of cultural methods which render rust infection less common, and the limitation of the rust to a single stage (uredo) of existence. Professor Arthur of the Indiana station believes that the latter factor is largely responsible for its decline. That cultural methods have also had a great deal to do with its disappearance is evident from the fact that our most skilful gardeners have never had it but one or two years, while less skilful and less painstaking growers have been more or less subject to it every year. Inside culture of the chrysanthemum appears to render it free from rust. It is essential always to select healthy stock to start with, and care should be taken to keep all unnecessary water off the foliage in cultivating in the greenhouse. If rust appears on a few leaves they should be picked and destroyed immediately, and badly infested plants should be removed and burned.

Stem Rot.

More or less trouble with a stem rot caused by the fungus *Fusarium* has been experienced by chrysanthemum growers since 1900. This fungus attacks the stem and clogs up the tissues, thus shutting off the water and food supply, and causing the lower leaves to fade, wither and die. The disease occurs most commonly as the result of conditions favorable to damping off. Those plants grown in the centre of the bed, more remote from light, etc., are the worst affected. Cultural precautions which will obviate damping-off conditions, such as less crowding, etc., are at present the only recommendations that can be given as constituting a preventive.

ROSES.

The cultivation of roses is carried on quite extensively in this State. The unsurpassed skill that is given to the production of this crop has resulted in reducing diseases to a minimum. Some of these establishments turn out superior produce year after year

as regularly and as perfectly as any manufacturing establishment turns out its wares. The most important diseases of the rose are as follows:—

Powdery Mildew (Sphaerotheca pannosa, (Wallr.) Lev.).

This occurs as a white powdery mass on the upper surface of the leaves, causing them to curl and become distorted. The most skilled growers, however, succeed, as a rule, in handling the conditions of the house so intelligently that the mildew is prevented. In case it becomes troublesome through lack of uncontrollable conditions, the standard remedy to apply, and one which is very effectual, consists in evaporating sulphur over a lamp. A more practical, as well as a more efficient method of applying sulphur, is to repeatedly paint the pipes with a mixture of sulphur and oil.

Black Spot (Actinonema Rosea, (Lib.) Fr.).

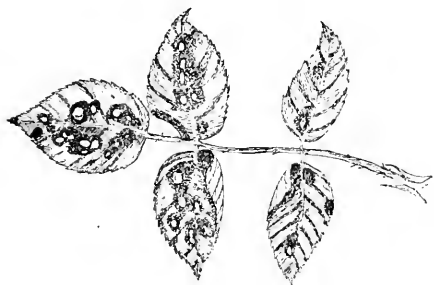


FIG. 9. — Black spot of rose.

Black spot occurs on the leaves, causing them to turn more or less yellow and resulting in their falling off (see Fig. 9). Certain spraying mixtures have been recommended for black spot, but the most satisfactory method of treatment is to keep the leaves picked off and

avoid a close atmosphere at night and on wet, dull days.

Bronzing of Roses.

Rose leaves frequently become spotted and turn yellow and drop off without being affected with the black spot fungus. This happens to those leaves near where the stem has been cut, and is a purely functional disorder due, apparently, to the starvation of that particular leaf. It resembles somewhat the black spot, and is termed “bronzing.” In all probability it is a correlated growth phenomenon resulting from pruning.

Eel Worms.

Rose growers are sometimes troubled with eel worms, and in some instances large losses have resulted (see Fig. 10). In one instance, to our knowledge, a rose establishment which had pro-

duced \$17,000 of roses annually reduced its output, for a few years, to about \$2,000 or \$3,000, due to the disastrous results of

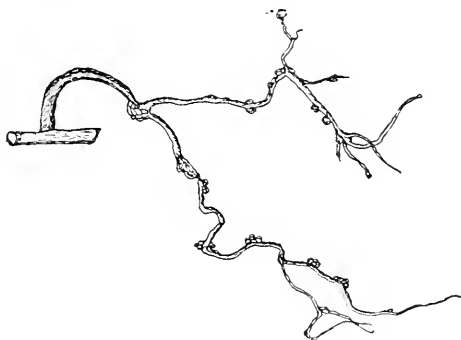


FIG. 10. — Root gall of rose.

eel worms. Other instances could be cited where rose growers have been almost forced out of business by the pests. In some establishments, where unusual care has been taken, the houses have never become infested with these worms. For remedies consult “Tomatoes,” etc.

CARNATIONS.

Rust (Uromyces caryophyllinus, (Schrank) Schrt.).

This fungous parasite, which is familiar to every one who grows carnations, is not dreaded so much as when it first made its appearance some years ago. It is decidedly less prevalent at the present time, by reason, perhaps, of less susceptible varieties being grown, and also because carnation growers have become more familiar with the conditions which succeed in reducing the rust. The practice of subirrigation and liming the foliage, together with attention to moisture conditions, have been responsible for a diminishing number of rusty plants. Spraying experiments have never proven satisfactory for the carnation rust, and the best and most rational remedies, here as elsewhere, consist in paying attention to cultural conditions.

Stem Rots (Fusarium Rhizoctonia).

There are at least two distinct types of stem rot caused by the above-mentioned fungi. These rots constitute perhaps the worst features which carnation growers have to contend with at the present time. The rot caused by the sterile *Rhizoctonia* can be controlled by sterilizing the soil, and that caused by *Fusarium*, in all probability, cannot be controlled by this method. Neither can

we expect to control by sterilization any fungus, which is freely propagated by spores. There are probably cultural methods that can be applied in the greenhouse which will alleviate the troubles caused by *Fusarium*, and experiments are now being conducted by us with that end in view. Undoubtedly, starting the plants in uninfested soil and cultivating on new land where *Fusarium* is likely to be less common will aid to overcome the rot to a large extent.

Among other diseases of the carnation which are more or less common is the *Stigmonose*, or *Bacteriosis*, as it has been called, which is believed to be due to insect stings, causing a small purplish spot on the leaves. There are also the *Anthracnose*, fairy ring, leaf spot, etc., which are more or less prevalent.

VIOLETS.

Leaf Spot (Alternaria Viola, Dorsett).

More than one fungus was formerly believed to be the cause of the violet leaf spot (see Fig. 11.) More recent investigations,

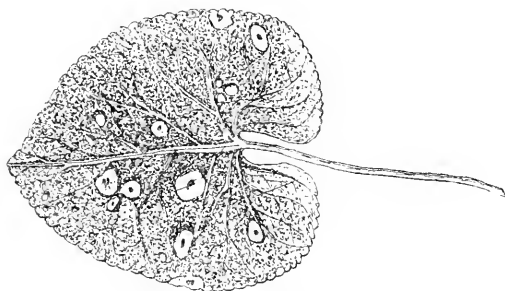


FIG. 11. — Violet leaf spot.

however, would seem to indicate that most of these spots are caused by the above-named fungus. The application of fungicides have proven of little or no value as preventives, and the best authorities recommend strict adherence to the most careful cultural conditions, together with the selection of the strongest and healthiest plants for crop purposes.

Eel Worms.

These are very troublesome to violets because of minute galls on the roots, which are readily overlooked, and the same method of extermination holds here as elsewhere (see "Tomatoes"). Care must be taken, however, not to start the plants in soil infested with eel worms.

